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Medical Transcription Fundamentals

Where Success Takes Root

SECOND EDITION

DIANE GILMORE

Wolters Kluwer Health | Lippincott Williams & Wilkins

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Diane Gilmore, CMT, AHDI-F

From the Publisher of Stedman's

Wolters Kluwer Health | Lippincott Williams & Wilkins

Philadelphia • Baltimore • New York • London
Buenos Aires • Hong Kong • Sydney • Tokyo

Senior Publisher: Julie Stegman
Acquisitions Editor: Peter Sabatini
Product Director: Eric Branger
Senior Product Manager: Amy Millholen
Marketing Manager: Shauna Kelley
Copyeditor: Kristin Wall
Compositor: Aptara, Inc.
Printer: C&C Offset – China

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Philadelphia, PA 19103 USA

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Baltimore, Maryland 21201

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Printed in China

Library of Congress Cataloging-in-Publication Data

Gilmore, Diane M. (Diane Marie), 1957- author.
Medical transcription fundamentals : where success takes root / Diane Gilmore, CMT, AHDI-F. – Second Edition.
p. ; cm.
Includes bibliographical references and index.
Summary: "Unlike other textbooks that discuss medical concepts in complex and abstract terms, this book outlines the fundamentals of medical specialties in a format that is easy to understand"–Provided by publisher.

ISBN 978-1-60913-866-0 (pbk. : alk. paper)
1. Medical transcription–Programmed instruction. I. Title.
[DNLM: 1. Forms and Records Control–methods–Programmed Instruction. 2. Medical Secretaries–Programmed Instruction. 3. Vocational Guidance–Programmed Instruction. W 18.2]
R728.8.G55 2012
653'.18–dc22

2010052802

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PREFACE

A medical transcriptionist, whether working in an office or in a home-based environment, is an integral part of a healthcare team. Far more than a typist in the medical field, a medical transcriptionist must be familiar with the terminology used in every medical specialty and must be able to produce the documents and reports required by each specialty in a professional and competent manner. These reports are the foundation of patient care and not only comprise a patient's complete record, but also track a patient's medical history and determine any future treatment.

Medical Transcription Fundamentals, Second Edition, a holistic approach to the study of medical transcription, is a comprehensive, yet concise, manual *written by a practicing medical transcriptionist for student medical transcriptionists*. This conversational approach, filled with practical, "from-the-trenches" tips and advice, makes this book particularly valuable to the new transcriptionist entering the field. Compatible with the Association for Healthcare Documentation Integrity (AHDI) Model Curriculum and designed with the adult-vocational and postsecondary school student in mind, this product meets the needs of both students and instructors. It can serve as the primary textbook in a short-term medical transcription course. Alternatively, it can be incorporated into a more comprehensive medical skills program in which a course in medical transcription may be one component of the curriculum. This text can also be used for independent, on-line study. After completing the exercises and activities in this book, students will be able to prepare standard medical reports accurately and efficiently. They will also be well versed in the fundamentals of anatomy and medical terminology as used in various medical specialty practices.

The majority of medical transcription textbooks currently on the market focus on general simulation and transcription activities. Most are not written by medical transcription practitioners and do not cover the issues relevant to students entering this field. Those textbooks that do, typically do more flexing of vocabulary prowess rather than simply explaining the topic in a manner that students can easily comprehend. Furthermore, these texts fail to follow up with adequate skill-building exercises to reinforce an understanding of the concepts and terms associated with each specialty.

Medical Transcription Fundamentals identifies the specific knowledge, skills, and education required for medical transcriptionists and outlines the responsibilities associated with the occupation. With a light, conversational writing style that is easy to read and understand, this product lays a solid foundation for a medical transcription career by providing a conceptual understanding of general medical terms and various medical specialties in a way that is easily remembered. It further encourages independent thinking and provides practice in working with the concepts covered in each chapter through a variety of challenging exercises and activities.

NEW TO THIS EDITION

The second edition of *Medical Transcription Fundamentals* builds on the original edition of learning tools with the addition of two new chapters not covered very thoroughly in other products: *Surgery* and *Pharmacology*. The surgical chapter serves as a foundation on which to build a student's knowledge of preparing surgery reports in the acute care setting. This chapter covers the general concepts of surgery, along with terms typically encountered by a medical transcriptionist in transcribing operative reports, including patient positioning, anesthesia, fluids, tools and instruments, wound closures and coverings, formatting issues, and common surgical phrases, all of which will enable students to produce accurate, grammatically correct documentation of surgical procedures. The pharmacology chapter contains a comprehensive review of the purpose and history of drugs, medication descriptions, regulation, development, and the terminology used to indicate drug forms, types, and routes of

administration that are transcribed regularly by medical transcriptionists in nearly every medical report.

In addition, as the transition to general use of the electronic health record (EHR) is being mandated by the federal government as an effective means of lowering the nation's healthcare costs, it is vital that medical transcriptionists become proficient in the use of speech recognition technology, and this is a highly desirable skill for medical transcriptionists. To that end, this edition provides hands-on practice with speech recognition editing exercises for each of the specialty chapters using authentic speech-recognized drafts so that the student can develop these skills. The experience provided by exposure to this new technology can help students develop the confidence that these new skills will serve them well when they begin working.

In addition, the specialty sections now offer special ancillary activities called cloze exercises to help students test listening and reading comphrension. Simply put, a cloze exercise is a "fill-in-the-blank" document that consists of sentences of a report with several words missing. Instead of transcribing the report, students listen to the report as it is being dictated and supply the missing word or words by listening and comprehending the context of what is being said from the sentences dictated. These exercises enable students to use critical thinking skills to supply words that are missing from text by understanding the story being told. One of the skills of a competent medical transcriptionist who encounters terms they are not familiar with is to try to determine the missing word from the context of the report, or to be able to streamline researching for the word by understanding the topic being discussed. These exercises give students practicing in hearing and researching challenging medical terms.

Finally, this edition incorporates the latest styles, forms, and grammar and usage specific to the profession from *The Book of Style, Third Edition* by AHDI.

ORGANIZATION OF TEXT AND TASKS

The text is divided into three main sections. Part I, "Medical Transcription Fundamentals," describes the skills required in the medical transcription field, profiling a typical medical transcriptionist career. This profile details the responsibilities of the medical transcription professional and describes the various environments in which a medical transcriptionist might choose to work. This section also delineates the techniques and tools that are an integral part of the medical transcriptionist's daily work. Basic medical terminology is presented in this section, introducing students to terms that will appear in medical reports across the spectrum of specialties. Chapter exercises and activities develop and enhance students' understanding of general medical terminology and word-building skills. The basic structure of medical reports used in every field of medicine is analyzed and broken down into component parts, with an explanation of the type of information that belongs in each section. One entire chapter is devoted to editing and proofreading techniques, providing standard guidelines and helpful tips that students will use throughout the course and can continue using throughout their careers.

Part II, "Medical Specialties," is a comprehensive study of the specialized fields of medicine that students are most likely to encounter in the workplace, beginning with the most common specialties and progressing to more complex and esoteric areas of medical practice. Each chapter begins with an in-depth exploration of a particular anatomic/physiologic system, followed by a discussion of the diseases common to that part of the body; the standard diagnostic studies used to detect these diseases; and the relevant procedures, protocols, and pharmacology typically used to treat them. Beautifully rendered illustrations, most in full color, accompany the text to promote understanding of the subject matter. A variety of self-study exercises and activities interspersed throughout the chapters, including "real life" transcription of medical reports, provides opportunities for students to apply the concepts learned while simultaneously improving their computer skills. Each chapter contains a comprehensive listing of commonly used combining forms along with abbreviations and terminology relevant to the topic, *each fully defined and discussed in the chapter*.

Finally, Part III, "Your New Career," is a primer both for finding employment in the field and for starting a home-based medical transcription business. This section outlines approaches and techniques that can help to maximize the efficiency of searching for a position as a medical transcriptionist. In addition to explaining the fundamentals of a winning resume and an eye-catching cover letter, this portion of the textbook also explores various strategies for successfully passing online recruitment tests and impressing potential employers in the interview process, followed by a discussion of appropriate behaviors and attitudes for new medical transcriptionists in the workplace, with tips on becoming a valuable employee. In addition, considerations for operating a home-based medical transcription business are discussed in detail.

FEATURES OF THE BOOK

Unlike other textbooks that discuss medical concepts in complex and abstract terms, this book outlines the fundamentals of medical specialties in a format that is easy to understand. Comprehensive, yet concise, *Medical Transcription Fundamentals* explores each specialty from the perspective of a medical transcriptionist, with an emphasis on the information and knowledge base required by a new medical transcriptionist entering the field for transcribing the reports and documents used in a particular field.

Reference Tables and Review Questions

Each chapter includes a comprehensive collection of combining word forms as well as a list of fully defined abbreviations and medical terms associated with a particular specialty. These end-of-chapter resources provide a wealth of information that can be used by students in the classroom and on the job. In addition, each chapter concludes with a set of insightful questions designed to encourage class discussion and to test and reinforce the student's understanding of the chapter topics.

Transcription Tips and "On-the-Fly" Concept Reinforcement

Helpful "Transcription Tips," which alert students to common transcription mistakes, appear throughout each chapter. Short questions and quizzes are also interspersed throughout the text to test a student's immediate comprehension of the material presented.

Insight

Each chapter contains an informative "Insight" that presents up-to-date medical views and reviews, which present actual situations and events and help to broaden students' knowledge of the topics and promote insightful class discussion.

Computer Activities Using CD-ROM

The most significant feature of this text is the seamless integration of the information provided about various medical specialities with the opportunity for hands-on experience in transcribing dictation and preparing documents commonly used in the given fields of specialty from audio files. This package introduces the fundamental concepts associated with each field of medicine, and then reinforces these concepts with creative chapter activities found on the CD-ROM included with each student textbook.

The CD-ROM features a variety of supplemental activities designed to review the terms and concepts introduced in the chapter. The material is structured to strengthen an overall understanding of concepts; and learning is fun as students tackle different activities to reinforce the topics presented.

Additional questions, including fill-in-the-blanks, matching, true/false, and multiple choice (with answers for self-check), test students' retention and understanding of the material presented. Sample reports containing common errors provide proofreading practice. Games, quizzes, and puzzles help making learning fun and interesting.

Additional dictation contained in computer .mp3 files for supplemental transcription practice provides an opportunity for the student to practice "real life" transcription of authentic medical reports dictated by physicians practicing a variety of medical specialities. The .mp3 file format allows students to listen to and transcribe dictation using keyboard controls. In addition, the dictation files reflect the voices of not only real doctors in many places, but a variety of dialects and accents, allowing students to experience and practice transcribing material dictated by English-as-a-second-language (ESL) clinicians and to be well prepared when encountering these types of reports on the job.

In addition to these chapter activities, the CD-ROM contains a comprehensive reference section, which includes an alphabetical compilation of the medical terminology and abbreviations referenced and defined throughout the text and a complete list of all the transcription tips presented.

INSTRUCTOR'S RESOURCES

The instructor's resources available for use with *Medical Transcription Fundamentals*, include a variety of helpful teaching tools that encourage active learning:

- Complete lesson plans, in *.doc* format for easy viewing and printing, which provide an outline of the lesson presented, textbook page references, figure and table references, PowerPoint slide numbers, and a list of creative class activities and teaching suggestions for the instructor to help reinforce the topics discussed, *all in one convenient view.*
- Answers to exercises and transcription activities.
- PowerPoint slide presentations to assist in reinforcing concepts.
- An image bank containing the art from the textbook that may be used in the classroom.
- A test generator program that can create chapter or cumulative tests from hundreds of test questions in a snap.
- Supplemental games and quizzes.

In summary, students who complete the exercises and activities in *Medical Transcription Fundamentals* will be well prepared for careers in the medical transcription field, whether they choose to work in private physicians' offices, clinics or hospital settings, or as self-employed medical transcription entrepreneurs. Students receive a comprehensive understanding of the basic concepts as taught by a working medical transcription and instructor in the field. This valuable and timely information, associated with various medical specialties and reinforced with "real life" activities involving actual medical reports and documents, will provide students with the confidence and competence necessary to secure a position as a medical transcriptionist in this rewarding profession.

USER'S GUIDE

This User's Guide introduces you to the many features of *Medical Transcription Fundamentals*. Taking full advantage of these features, you not only read about medical transcription, you become engaged in exercises and activities that boost your ability to learn and put your knowledge and skills into practice.

TEXT FEATURES

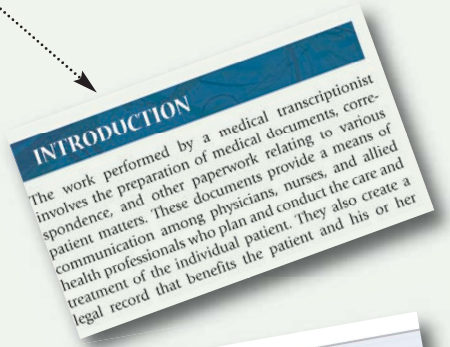
Each chapter is loaded with features that enable you to concentrate on key points, quickly build transcription skills, and assess your knowledge as you progress through the text.

Objectives

Objectives focus your studies as you progress through the chapter by setting forth what you will know upon successful completion of the chapter.

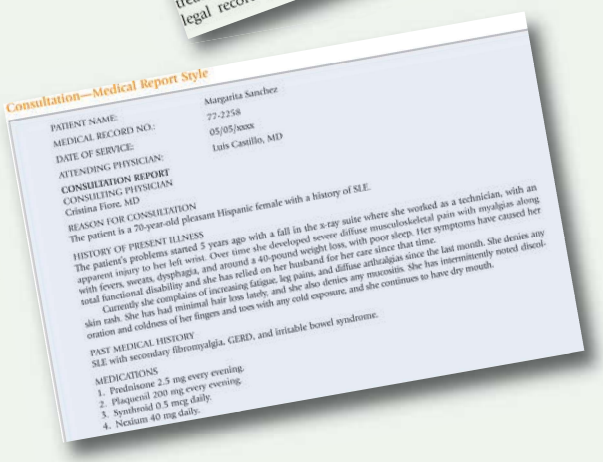
Introduction

The Introduction summarizes the chapter contents and explains why the material is essential for successful medical transcription practice.


INTRODUCTION
The work performed by a medical transcriptionist involves the preparation of medical documents, correspondence, and other paperwork relating to various patient matters. These documents provide a means of communication among physicians, nurses, and allied health professionals who plan and conduct the care and treatment of the individual patient. They also create a legal record that benefits the patient and his or her

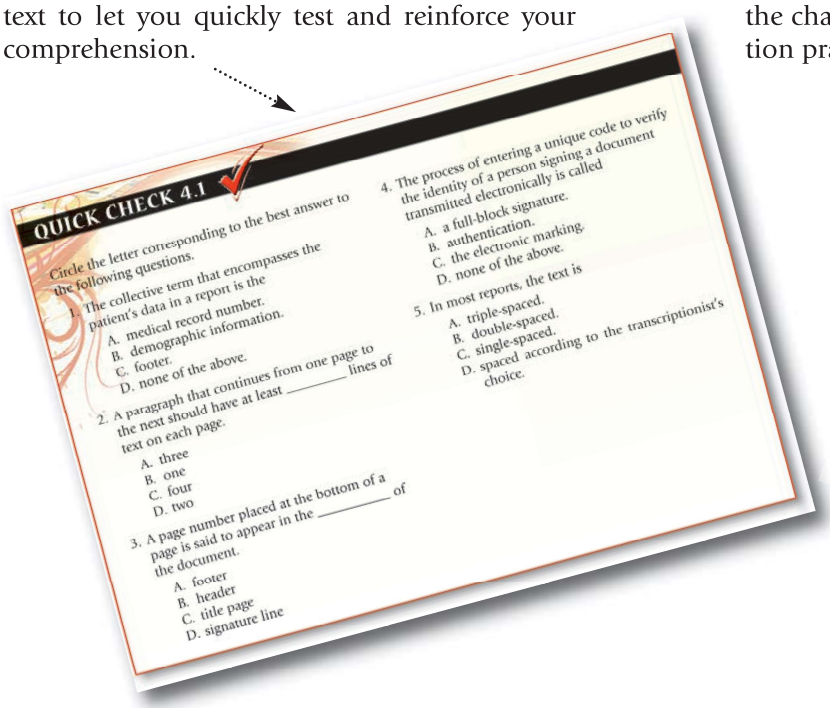
Sample Medical Documents

Sample Medical Documents serve as models that you can use for the text's transcription exercises and later on in your own professional practice.


Consultation—Medical Report Style
PATIENT NAME: Margarita Sanchez
MEDICAL RECORD NO.: 77-2258
DATE OF SERVICE: 05/05/xxxx
ATTENDING PHYSICIAN: Luis Castillo, MD
CONSULTATION REPORT
CONSULTING PHYSICIAN
Cristina Fiore, MD
REASON FOR CONSULTATION
The patient is a 70-year-old pleasant Hispanic female with a history of SLE.
HISTORY OF PRESENT ILLNESS
PAST MEDICAL HISTORY
SLE with secondary fibromyalgia, GERD, and irritable bowel syndrome.
MEDICATIONS
1. Prednisone 2.5 mg every evening.
2. Plaquenil 200 mg every evening.
3. Synthroid 0.5 mcg daily.
4. Nexium 40 mg daily.

Quick Check

Quick Checks are interspersed throughout the text to let you quickly test and reinforce your comprehension.



QUICK CHECK 4.1

Circle the letter corresponding to the best answer to the following questions.

1. The collective term that encompasses the patient's data in a report is the
   A. medical record number.
   B. demographic information.
   C. footer.
   D. none of the above.

2. A paragraph that continues from one page to the next should have at least _____ lines of text on each page.
   A. three
   B. one
   C. four
   D. two

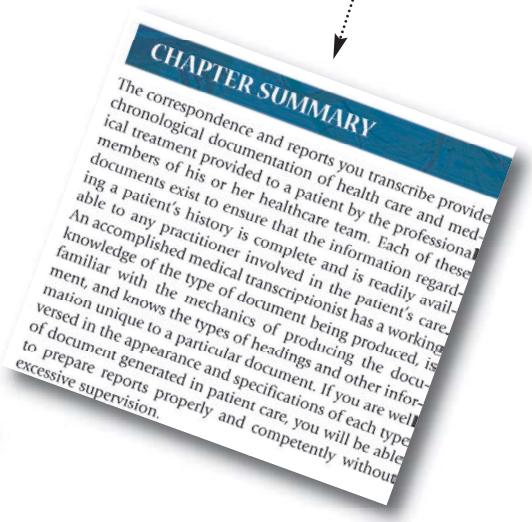
3. A page number placed at the bottom of a page is said to appear in the _____ of the document.
   A. footer
   B. header
   C. title page
   D. signature line

4. The process of entering a unique code to verify the identity of a person signing a document transmitted electronically is called
   A. a full-block signature.
   B. authentication.
   C. the electronic marking.
   D. none of the above.

5. In most reports, the text is
   A. triple-spaced.
   B. double-spaced.
   C. single-spaced.
   D. spaced according to the transcriptionist's choice.

Chapter Summary

The Chapter Summary reinforces the key points of the chapter and their relevance to medical transcription practice.

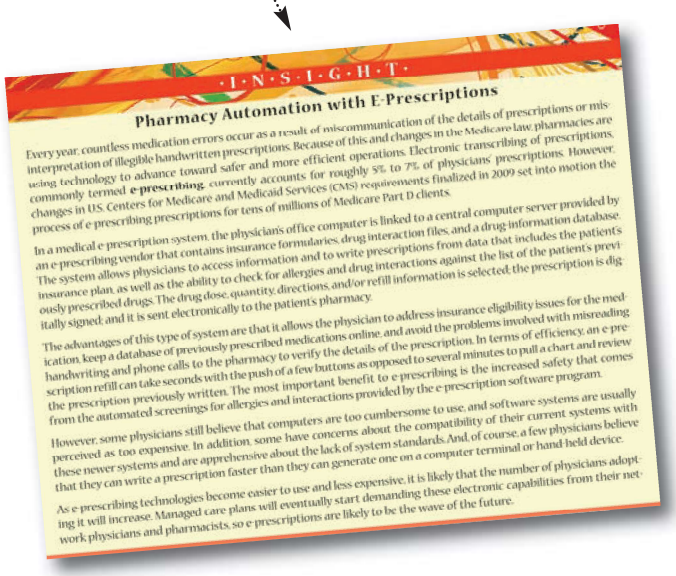


CHAPTER SUMMARY

The correspondence and reports you transcribe provide chronological documentation of health care and medical treatment provided to a patient by the professional members of his or her healthcare team. Each of these documents exist to ensure that the information regarding a patient's history is complete and is readily available to any practitioner involved in the patient's care. An accomplished medical transcriptionist has a working knowledge of the type of document being produced, is familiar with the mechanics of producing the document, and knows the types of headings and other information unique to a particular document. If you are well versed in the appearance and specifications of each type of document generated in patient care, you will be able to prepare reports properly and competently without excessive supervision.

Insight

Insight at the end of each chapter offers additional perspectives and deepens your understanding of the chapter.



·I·N·S·I·G·H·T·

Pharmacy Automation with E-Prescriptions

Every year, countless medication errors occur as a result of miscommunication of the details of prescriptions or misinterpretation of illegible handwritten prescriptions. Because of this and changes in the Medicare law, pharmacies are using technology to advance toward safer and more efficient operations. Electronic transcribing of prescriptions, commonly termed **e-prescribing**, currently accounts for roughly 5% to 7% of physicians' prescriptions. However, changes in U.S. Centers for Medicare and Medicaid Services (CMS) requirements finalized in 2009 set into motion the process of e-prescribing prescriptions for tens of millions of Medicare Part D clients.

In a medical e-prescription system, the physician's office computer is linked to a central computer server provided by an e-prescribing vendor that contains insurance formularies, drug interaction files, and a drug-information database. The system allows physicians to access information and to write prescriptions from data that includes the patients insurance plan, as well as the ability to check for allergies and drug interactions against the list of the patient's previously prescribed drugs. The drug dose, quantity, directions, and/or refill information is selected; the prescription is digitally signed; and it is sent electronically to the patient's pharmacy.

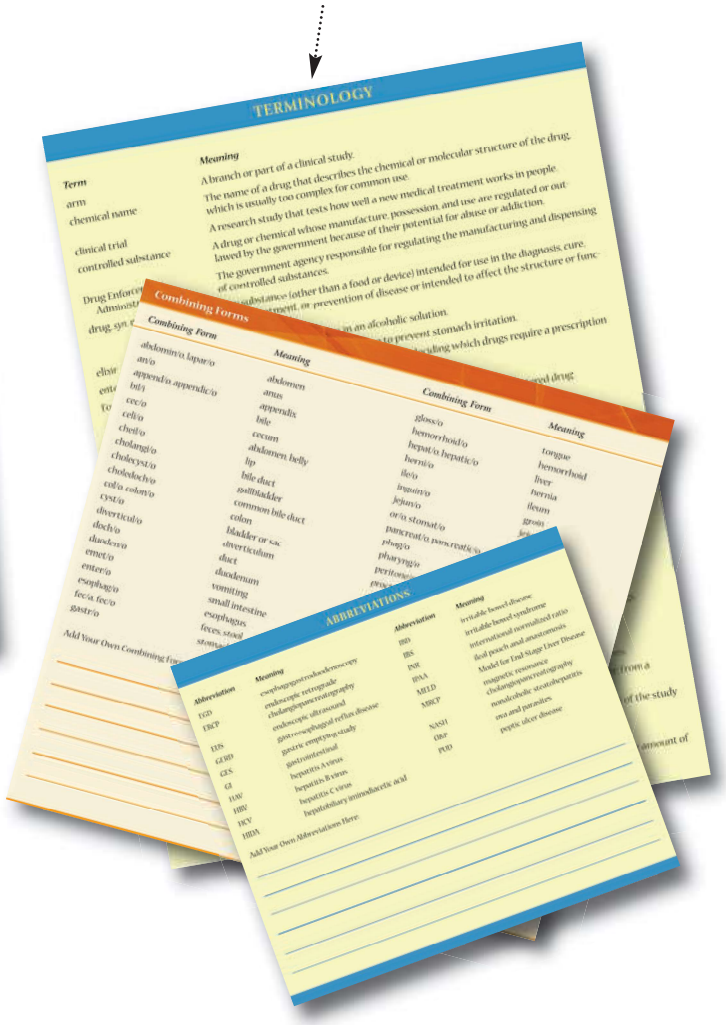
The advantages of this type of system are that it allows the physician to address insurance eligibility issues for the medication, keep a database of previously prescribed medications online, and avoid the problems involved with misreading handwriting and phone calls to the pharmacy to verify the details of the prescription. In terms of efficiency, an e-prescription refill can take seconds with the push of a few buttons as opposed to several minutes to pull a chart and review the prescription previously written. The most important benefit to e-prescribing is the increased safety that comes from the automated screenings for allergies and interactions provided by the e-prescription software program.

However, some physicians still believe that computers are too cumbersome to use, and software systems are usually perceived as too expensive. In addition, some have concerns about the compatibility of their current systems with these newer systems and are apprehensive about the lack of system standards. And, of course, a few physicians believe that they can write a prescription faster than they can generate one on a computer terminal or hand-held device.

As e-prescribing technologies become easier to use and less expensive, it is likely that the number of physicians adopting it will increase. Managed care plans will eventually start demanding these electronic capabilities from their network physicians and pharmacists, so e-prescriptions are likely to be the wave of the future.

Terminology Tables

Combining forms, abbreviations, and terminology are listed and defined at the end of each chapter.



TERMINOLOGY

Term — Meaning

arm — A branch or part of a clinical study.

chemical name — The name of a drug that describes the chemical or molecular structure of the drug.

clinical trial — A research study that tests how well a new medical treatment works in people.

controlled substance — A drug or chemical whose manufacture, possession, and use are regulated or outlawed by the government because of their potential for abuse or addiction.

Drug Enforcement Administration — The government agency responsible for regulating the manufacturing and dispensing of controlled substances.

drug — substance (other than a food or device) intended for use in the diagnosis, cure, treatment, or prevention of disease or intended to affect the structure or function

Combining Forms

Combining Form — Meaning

abdomin/o, laparo/o — abdomen
an/o — anus
append/o, appendic/o — appendix
bil/i — bile
cec/o — cecum
cel/o — abdomen, belly
chol/e — bile, gallbladder
cholangi/o — bile duct
cholecyst/o — gallbladder
choledoch/o — common bile duct
col/o, colon/o — colon
cyst/o — bladder or sac
diverticul/o — diverticulum
duct/o — duct
duoden/o — duodenum
emes/o — vomiting
enter/o — small intestine
esophag/o — esophagus
fec/o, fec/i — feces, stool
gastr/o — stomach

Combining Form — Meaning

gloss/o — tongue
hemorrhoid/o — hemorrhoid
hepat/o, hepatic/o — liver
hern/o — hernia
ile/o — ileum
ileum/o — ileum
jejun/o — jejunum
or/o, stomat/o — mouth
pancreat/o, pancreatic/o — pancreas
phag/o — eating, swallowing
pharyng/o — pharynx
peritone/o — peritoneum

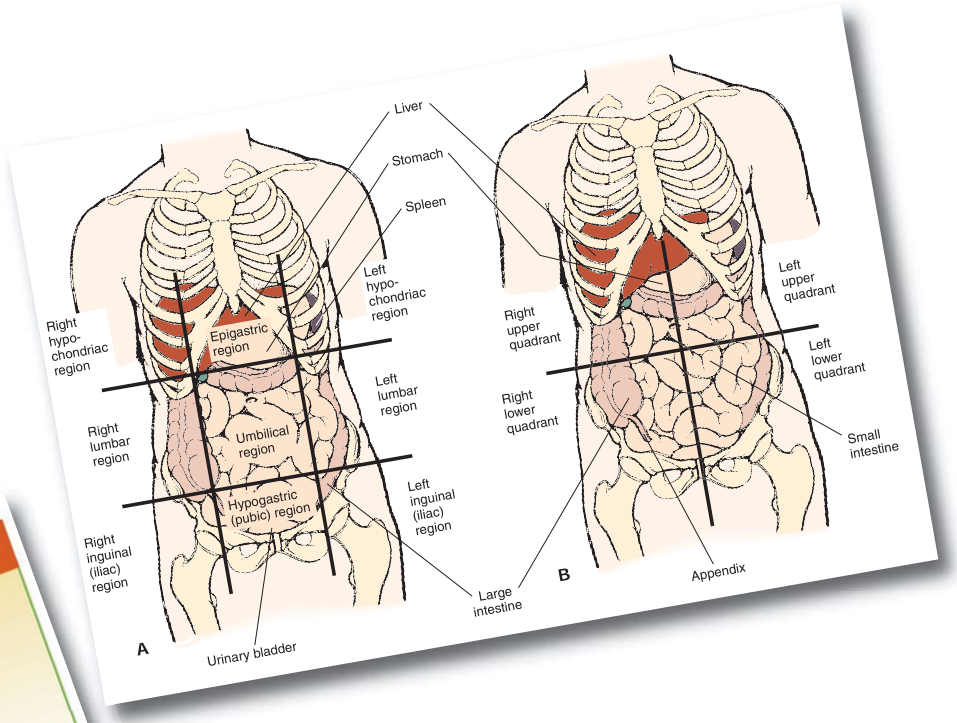
ABBREVIATIONS

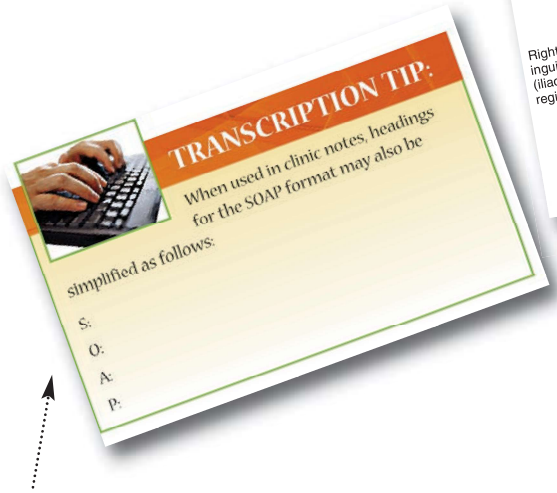
Abbreviation — Meaning

ERCP — endoscopic retrograde cholangiopancreatography
ERUS — endoscopic ultrasound
GERD — gastroesophageal reflux disease
GES — gastric emptying study
GI — gastrointestinal
HAV — hepatitis A virus
HBV — hepatitis B virus
HCV — hepatitis C virus
HIDA — hepatobiliary iminodiacetic acid
IBD — inflammatory bowel disease
IBS — irritable bowel syndrome
INR — international normalized ratio
IPAA — ileal pouch anal anastomosis
MELD — Model for End-Stage Liver Disease
MRCP — magnetic resonance cholangiopancreatography
NASH — nonalcoholic steatohepatitis
Oxy — oxyuriasis
PUD — peptic ulcer disease

Color Illustrations

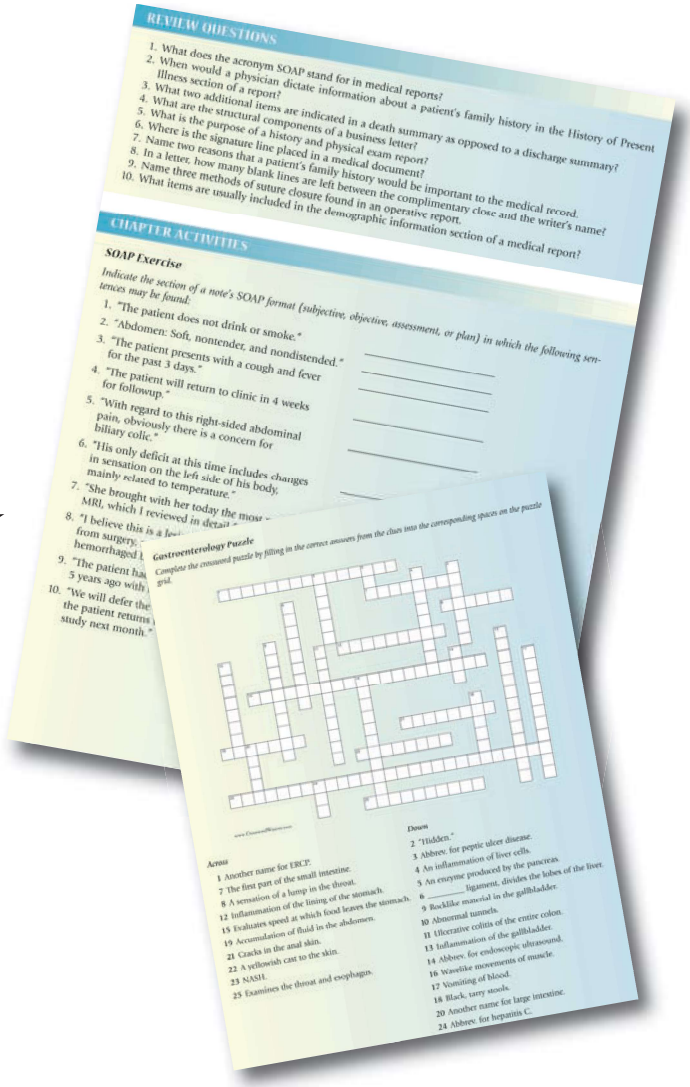
Detailed illustrations enable you to better understand and visualize the medical terminology that transcriptionists need to know.





Transcription Tips

Transcription Tips throughout the text help you avoid common errors and offer helpful hints based on the author's first-hand experience.

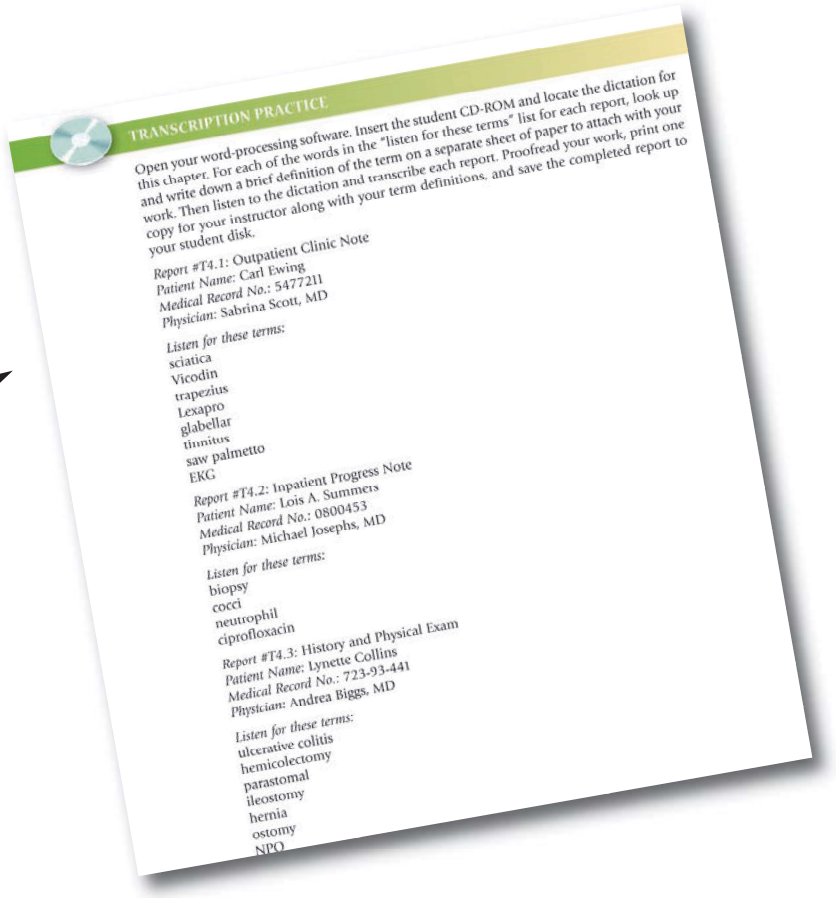


Review Questions and Chapter Activities

Review questions, exercises, and activities provide a variety of opportunities for you to apply concepts learned in each chapter and improve your skills.

Transcription Practice

Transcription Practice at the end of most chapters lets you put your knowledge into practice by creating medical documents using dictation you'll find on the Student CD-ROM.


TRANSCRIPTION PRACTICE

Open your word-processing software. Insert the student CD-ROM and locate the dictation for this chapter. For each of the words in the "listen for these terms" list for each report, look up and write down a brief definition of the term on a separate sheet of paper to attach with your work. Then listen to the dictation and transcribe each report. Proofread your work, print one copy for your instructor along with your term definitions, and save the completed report to your student disk.

Report #T4.1: Outpatient Clinic Note
Patient Name: Carl Ewing
Medical Record No.: 5477211
Physician: Sabrina Scott, MD

Listen for these terms:
sciatica
Vicodin
trapezius
Lexapro
glabellar
tinnitus
saw palmetto
EKG

Report #T4.2: Inpatient Progress Note
Patient Name: Lois A. Summers
Medical Record No.: 0800453
Physician: Michael Josephs, MD

Listen for these terms:
biopsy
cocci
neutrophil
ciprofloxacin

Report #T4.3: History and Physical Exam
Patient Name: Lynette Collins
Medical Record No.: 723-93-441
Physician: Andrea Biggs, MD

Listen for these terms:
ulcerative colitis
hemicolectomy
parastomal
ileostomy
hernia
ostomy
NPO

Student Resources

Your Student CD-ROM reinforces what you learn in the text with a variety of creative exercises corresponding to each chapter. It includes:

- Ten hours of real dictation by physicians who have distinct accents and dialects and who practice in a variety of specialties
- Scripted dictation (3 files for each specialty chapter) as a companion to the Transcription Practice exercises in the text
- Medical report templates for preparing the documents discussed in the text
- Skill-building activities such as proofreading exercises, question bank, speech recognition exercises, cloze exercises (fill-in-the-blank with accompanying audio reports), and flash cards
- Electronic glossary containing the medical terminology used in the text
- Appendices from the text
- Compiled list of all Transcription Tips from the text

The proofreading exercises, question bank, flash cards, glossary, medical report templates, transcription tips, and appendices are also found on the companion student site at http://thepoint.lww.com/gilmore2e. See the inside front cover for information on accessing the student resources on thePoint.

Taking full advantage of the student resources allows you to make a successful transition from student to professional!

Instructor Resources

The online instructor resources available for use with *Medical Transcription Fundamentals, Second Edition*, include lesson plans and activities; test generator; PowerPoints; image bank; extra exercises; and answers to chapter exercises, Transcription Practice, real dictation, and proofreading exercises.

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PART I

Medical Transcription Fundamentals

1

A CAREER PROFILE

OBJECTIVES

After completing this chapter, you will be able to:

- Explain the concept of medical transcription and describe the basic knowledge and skills required to be a medical transcriptionist.
- Trace the historical development of record keeping and the history of medical transcription.
- Describe the concept of patient confidentiality.
- Describe the work opportunities and environments available for medical transcriptionists.
- Discuss the purpose and benefits of professional association membership, including opportunities for credentialing in the field of medical transcription.

INTRODUCTION

The health information management staff is an integral part of any successful medical office, from a small suburban office of a single physician to a large city hospital system. A medical transcriptionist, whether working at a medical facility or in a home-based environment, is a vital part of the medical records staff. Far more than a typist in the medical field, a medical transcriptionist must be familiar with the terminology used in every medical specialty and must be able to produce the documents and reports required by each specialty in a professional and competent manner. These reports comprise a **medical record**, a series of documents that track a patient's medical history. This chapter profiles the profession and details the required skills, responsibilities, and work environments in the field of medical transcription.

WHAT IS A MEDICAL TRANSCRIPTIONIST?

By definition, a **medical transcriptionist** (MT) is a person who converts medical information spoken by a healthcare provider into a written text document that can be printed or retained as a permanent record of a patient's medical care. A medical transcriptionist is *not* a typist, word processor, or medical secretary. Although the profession still uses the term "medical transcriptionist," MTs today are actually skilled medical language specialists, whose work documents patient care and helps facilitate the delivery of healthcare services.

According to the *Occupational Outlook Handbook* published by the U.S. Bureau of Labor Statistics, employment opportunities for MTs are expected to

increase well into the next decade as the profession grows to accommodate a larger aging population. Medical transcription services will also be in demand as the need grows for electronic documentation that can easily be shared by multiple providers. MTs will be needed not only to create medical records but also to edit documents, review and identify discrepancies in medical records, and transmit medical information electronically. MTs have a wide choice of employment opportunities in a rapidly expanding field, including those in supervisory or management positions, as well as opportunities in writing, editing, and teaching.

Success as an MT requires a fundamental knowledge of a variety of skills that encompass the relationship between a physician and a transcriptionist in the dictation-transcription process. Whenever a patient seeks treatment at a hospital or clinic, the doctor dictates a report to document the facts of the encounter. These reports need to be converted into a written record of what occurred. An MT listens to the recordings made by physicians and other healthcare professionals, called **medical providers** (or, simply, **providers**). The MT transcribes the recordings into detailed patient reports, notes, correspondence, and other administrative materials. After the reports are reviewed and approved by the healthcare provider who dictated them, each transcribed report or record, along with its date of service, becomes part of the patient's permanent health record, either in print form or electronically in a computer database. This documentation is used by physicians and other healthcare providers to determine the care a patient will receive. Therefore, the MT must understand what is dictated and compose a healthcare record that is grammatically correct and accurate. In addition, while transcriptionists are required to record exactly what they hear, they are also expected to think about what is really being said and correctly interpret a physician's meaning.

Dictation is a collective word that encompasses the speech that is **transcribed**, or put into written form. Dictation in the medical field may include reports covering diagnostic studies, operative reports, letters, history and physical examinations, discharge summaries, inpatient progress reports, and outpatient clinic notes. A transcriptionist may transcribe this information directly from voice recordings heard through headphones or may edit reports created by the computer from a voice recognition program. Professionals who dictate reports into a patient's medical record can include doctors, nurse practitioners, nurses, residents, and other medical professionals who may all individually report about a specific encounter with a patient on a specific date of service. Because of this, one patient's visit can generate several reports from several providers, such that even a small medical practice or hospital can generate hundreds of reports in a day. An MT performs the duties of typing and formatting dictated accounts of these encounters into a written, easily readable form that complies with all policies and procedures regarding patient confidentiality.

However, more than just good listening and typing skills are required to transcribe medical documents accurately. It simply is not enough to memorize some medical terms heard on television and to be a fast typist. Although there are no "formal" educational requirements for becoming a medical transcriptionist, an MT must possess certain skills and attributes in order to be successful in this profession.

REQUIRED KNOWLEDGE AND SKILLS

The field of medicine encompasses a huge volume of knowledge, and working in this field entails a tremendous responsibility. The following outlines the very specific set of knowledge, skills, and self-discipline skills an MT must possess to be successful in the profession:

- Skill in the use of personal computers, word-processing software, and various electronic means of transmitting finished reports to the medical provider. Software programs such as MS Word have dramatically transformed the way MTs work and are a dominant presence in the production of medical documents. Physicians and other healthcare providers employ state-of-the-art electronic technology to dictate and transmit highly complex and confidential information about their patients. These medical professionals rely on skilled MTs to use the corresponding technology to create accurate medical records. This technology is always changing. Advances in speech technology and the electronic transfer of data continue to shape the changing role of an MT. Therefore, it is essential to keep abreast of advances in computer technology.
- Expert knowledge of the English language, including rules governing punctuation and capitalization. You must be able to construct a proper sentence, using words, capitalization, and punctuation according to the standard rules of English-language grammar. You must also be able to proofread work for typographical and grammatical errors to make sure that the final report is accurate, complete, and grammatically correct.
- Knowledge of medical terminology as it applies to anatomy and physiology, diagnostic procedures, and treatments. A practical knowledge of the complex language of medicine enables you to transcribe a healthcare provider's dictation accurately and in a clear and comprehensible report format. Our collection of medical knowledge increases and changes every day, and you must always be ready to learn the latest words and

phrases of medical terminology. Achieving familiarity and fluency with medical terminology across a range of specialties is a formidable task, but this knowledge will set you apart from the rest as a quality MT.

- Have you ever listened to a song you love, read the lyrics, and then discovered just how far off you really were when you compared your notes to the writer's actual words? In medicine, words can sound deceptively alike, and inaccuracies can have dire consequences. An MT must have a thorough understanding of words to distinguish between terms that sound alike but are spelled differently and which have completely different meanings. He or she must be familiar with the terms used to describe anatomy, disease processes, medical procedures, and diagnostic studies. An MT must enjoy working with words and must have excellent reference skills to locate unusual and obscure terms. An MT not only transcribes words to create reports that are factually accurate but also is responsible for the correct format, punctuation, capitalization, and spelling of the text of these reports.
- Excellent listening skills to understand and correctly transcribe patient assessments and treatments which reduces the chance of patients receiving ineffective or even harmful treatments and ensures a high quality of patient care. In addition, you must be able to discern different accents and dictation styles, especially when English is not a dictator's first language. Dictators who speak English as a second language (ESL) may pronounce words differently or put emphasis on words or syllables in the wrong place. They may pronounce English letters differently, especially when their native language does not have similar letters and sounds. Some ESL dictators forget to say articles such as *a*, *an*, or *the*, which do not exist in their native languages.
- Critical thinking skills to understand the context of what is being dictated. Medical transcription is not simply typing words. You must pay strict attention to the minute details of the story unfolding in dictation and catch inconsistencies that may occur during dictation. For example, a diagnosis inconsistent with the patient's history and symptoms may be mistakenly dictated. The medical transcriptionist questions, seeks clarification, verifies the information, and enters the correct information into the report. Physicians frequently give inaccurate patient statistical information, mispronounce medications, and dictate without the patient's chart readily available (such as at home or from a cell phone), thereby furnishing data that is sometimes incorrect or simply unintelligible. An MT interprets the data as it is being dictated, listens for inaccuracies in information, and creates a document that is technically accurate in the context of the medical situation.
- A high level of concentration. Dictation is not always smooth and clear. Physicians often whisper, mutter, and sometimes talk to themselves or other people, forgetting a transcriptionist is listening and attempting to transcribe every word. They talk over screeching ambulance sirens, wailing babies, phones, and beepers. They chew gum, eat, interchange item numbers in a list, and often repeat key portions of dictation because they forget they have already dictated this information. Through all these distractions, an MT must be able to concentrate on the words being dictated.
- An interest in the field and the language of medicine. An MT must have a genuine interest in understanding the physiology of the human body and learning how body systems work. You need to be familiar with the drug names, dosages, and uses for hundreds of commonly prescribed medications in order to detect inconsistencies. For example, you should know or be able to look up the correct drug dosage when it is unclear whether "50 mg" or "15 mg" is being dictated. You also must have a desire to learn about the latest advances in pharmaceutical treatments for illnesses. You must desire to learn more about the laboratory and diagnostic studies used in the evaluation of diseases and remember normal laboratory values so as not to transcribe an inaccurate figure when an erroneous value is dictated. Learning all you can about the medical field, the latest advances in diagnostic and treatment protocols, and the terminology used to describe them will enable you to be the best MT you can be.
- Professional keyboarding skills. As a medical transcriptionist, you must be able to type materials that regularly include medical or legal terminology as well as words that derive from foreign languages. In addition, although keyboarding accuracy is emphasized over speed in creating medical reports, you should be aware of your typing speed. You should strive to maintain a typing speed of 60 words per minute or better in order to type documents and reports and transmit them to the medical provider in a timely manner. This is important because most MTs are paid by the total number of lines produced, as opposed to "dollars per hour." A line count is a measurement of lines typed, and the number of lines typed determines how much you are paid. Your value as an MT has a lot to do with your line count; a higher line count indicates that you can produce more typed lines, and hence, more reports, which is discussed in more detail in Chapter 22.

QUICK CHECK 1.1

Indicate whether the following statements are true (T) or false (F).

1. A medical transcriptionist does not have to know English very well in order to prepare medical reports. T F
2. A medical transcriptionist must be able to think critically. T F
3. A medical transcriptionist must have excellent listening skills. T F
4. The Hippocratic Oath outlines ethics for physicians' pastimes. T F
5. Medical television shows are a good source of education in medical transcription. T F

- Skill in creating a variety of reports, each of which may have its own formatting requirements. Reports outlining the details of patient care take many forms, including histories and physical examinations, progress reports, emergency room notes, consultations, operative reports, discharge summaries, clinic notes, referral letters, radiology reports, pathology reports, and other documents. These reports cover a variety of medical specialties. Therefore, it is essential that you be familiar with the formatting requirements of different types of reports and the information they must contain.
- Self-discipline. Contrary to the television and print ads glamorizing medical transcription as a profession in which you can work "whenever you feel like it," to be a successful MT you must have the discipline to work the hours required and to turn in your work on time. In fact, dependability is the number one factor that medical transcription service owners look for—even more than top grades and perfect attendance in school—when hiring a new employee. "Dependability" means transcribing work accurately and efficiently while blocking out the distractions of children, televisions, pets, ringing telephones, or neighbors who want to stop by simply because "you are home." No one can effectively transcribe complex medical reports in a state of distraction. You will need to block out periods of time that can be devoted solely to transcription and put off tasks such as cooking dinner, playing with the kids, or folding laundry until after your work is finished. Some at-home MTs hire a babysitter to come in and watch the kids while they work and make it clear to everyone in the house that "when mom (or dad) is working, do not disturb unless there is an emergency."
- Knowledge of medical ethics and the self-discipline to abide by the rules of ethical conduct. When most people think of ethics, or moral conduct, they think of rules for distinguishing between right and wrong, such as the Golden Rule ("Do unto others as you would have them do unto you"). **Ethics** are the norm for conduct that distinguish between acceptable and unacceptable behavior. The **Hippocratic Oath**, one of the most famous pieces of writing in the history of medicine, outlines the tenets of ethical conduct of physicians. The oath was written by the Greek physician Hippocrates, called the Father of Medicine because of his discoveries and contribution to modern medicine. Originally translated from Greek, the oath included rules of conduct for doctors that physicians still honor today in caring for their patients. The oath should also guide you as an MT in your conduct as a representative of the medical profession. This means being a vigilant advocate for quality patient documentation and adhering to the highest level of privacy and security provisions. You should strive to uphold moral and legal rights of patients, safeguard patient privacy, and approach your work with a focus on ensuring patient safety and quality of care. This means exercising integrity in work practices as well as abiding by all laws and standards governing the practice of patient documentation. Ethical conduct for an MT means fostering an environment that facilitates integrity, professionalism, and safeguarding of patient information at all times.

In short, the primary characteristics and skills an MT must possess are extensive knowledge of medical terminology and a high level of understanding of how it is used across a variety of medical specialties; deductive reasoning; self-discipline; and the ability to pay attention to details—in order to transform spoken words into a comprehensive record that accurately details a person's medical history. In addition, an MT always must be mindful of patient confidentiality and security of medical information.

Read the list of questions in Table 1.1 and consider your answers. Whether you can answer yes to these

TABLE 1.1 Do I Have What It Takes?

Ask yourself the following questions that pertain to the characteristics of a successful medical transcriptionist. Can you answer "yes" to them all?

Do I have good spelling, verbal communication, and memory skills?
Do I have a good memory?
Do I have good listening skills?
Do I have good critical thinking skills?
Do I have the ability to sort, check, count, and verify numbers accurately?
Can I use computer equipment and software well? Do I know computer-related terminology?
Can I navigate the Internet quickly and efficiently?
Do I love typing different types of documents?
Am I able to follow written and oral instructions?
Do I have excellent English grammar, punctuation, and capitalization skills?
Do I have good or above-average typing skills (at least 60 wpm)?
Am I willing to learn basic-to-advanced medical terminology?
Am I interested in learning about human anatomy and physiology as well as the latest developments in medical treatments for diseases?
Am I proficient at listening to and understanding people for whom English is their second language?
Am I not afraid to ask questions of information I do not know?
Am I particular about the documents I create in terms of quality and accuracy?
Am I interested in professional development and mastering the knowledge and skills of my profession so I may grow and learn in my day-to-day work life?
Am I a detail-oriented individual?
Do I follow through with tasks, even if they sometimes take longer than usual to accomplish?
Can I maintain a high level of concentration for long periods of time?
Do I enjoy learning new things and challenging concepts?
Am I dedicated to professional development and being the best I can be at whatever I choose to do in my career?
Am I discrete and careful about not disclosing information that is confidential?

questions now or are working toward this objective as you complete your coursework, an awareness of the skills and characteristics of a competent medical transcriptionist will help you focus on your goal.

HISTORY AND PRINCIPLES OF MEDICAL RECORD KEEPING

As evidenced by ancient cave drawings, people have attempted to keep records of some sort since the beginning of human existence. Although the medium changed from cave walls to stone tablets, from papyrus to parchment, and now from paper to electronic files, the reason for maintaining records remains the same: to document an individual's history and achievements. In the days when few people could read or write, those who could, called **scribes**, were hired to copy and interpret the spoken words of others. They transcribed sacred orations into the written rules and procedures by which a society governs its citizens.

Medical transcription originated in the early 1900s when medical stenographers helped physicians document all of the interactions between a physician and a patient. A **stenographer**, a person skilled in the transcription of speech, accompanied the physician during visits with patients, listening and taking down the physician's dictation in shorthand to document the medical record on a manual typewriter, as illustrated in Figure 1.1.

During World War I, when dictation recording equipment first became available, physicians began to use this equipment to dictate their findings and treatment plans so that a transcriptionist might produce a

FIGURE 1.1. **Medical Transcription of the Past.** In the early 1900s, a stenographer took down the physician's dictation in shorthand and used a typewriter to document the medical record. Photo Credit: US National Oceanic and Atmospheric Administration.

written record at a later time. As physicians came to rely on the judgment and reasoning of experienced MTs to safeguard the accuracy and integrity of medical dictation, the MT evolved into a medical language specialist. As technology improves, the role of the MT will evolve into that of a medical language editor who reviews and corrects reports generated by voice recognition software to ensure the accurate processing of patient health information.

ELECTRONIC MEDICAL RECORD AND ELECTRONIC HEALTH RECORD

In the last decade, the US healthcare industry has embraced the use of technology for the entry and storage of patient information. An electronic storage system of patient data provides a secure, real-time electronic record of a patient's medical and health information generated by one or more medical providers during encounters in a care-delivery setting, such as a hospital, doctor's office, or clinic. Two terms, the **electronic medical record** (EMR) and the **electronic health record** (EHR), have come to be used interchangeably. However, these terms describe different concepts and procedures, both of which are crucial to improving the quality and efficiency of documenting patient information.

By definition, the electronic medical record is an individual application repository of a patient's medical encounters with a single provider. It consists of the provider's documentation of those encounters, including letters, chart notes, pharmacy record, allergies, billing information, and so on, as shown in the example screen shot from a patient's hospital EMR provider in Figure 1.2. The electronic health record (EHR), on the other hand, is a compilation of all the EMRs contained in the repository for a particular patient. This is a secure and private lifetime record of key health history and care

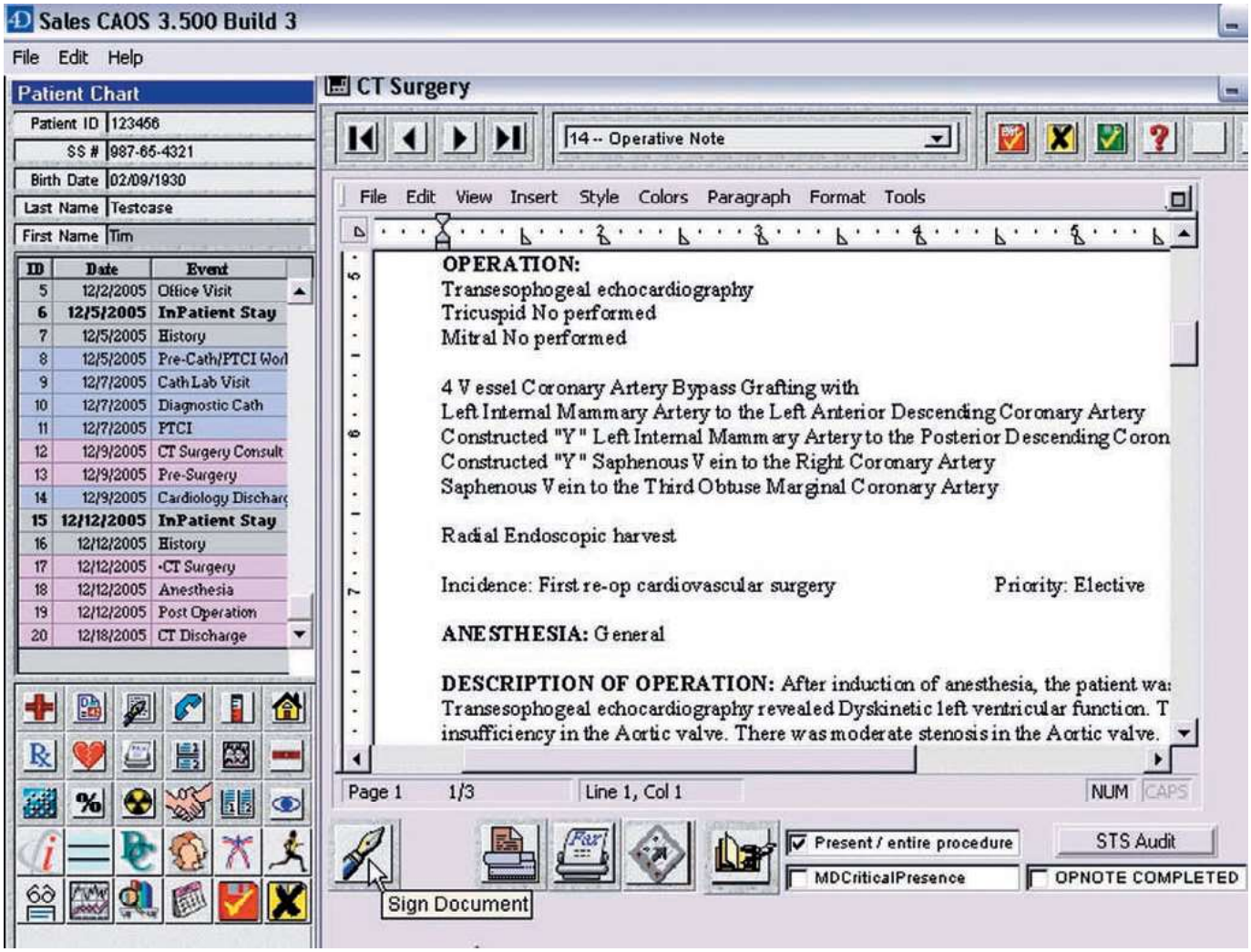
Sales CAOS 3.500 Build 3
File Edit Help
Patient Chart
Patient ID 123456
SS # 987-65-4321
Birth Date 02/09/1930
Last Name Testcase
First Name Tim
ID Date Event
5 12/2/2005 Office Visit
6 12/5/2005 InPatient Stay
7 12/5/2005 History
8 12/5/2005 Pre-Cath/PTCI Worl
9 12/7/2005 Cath Lab Visit
10 12/7/2005 Diagnostic Cath
11 12/7/2005 PTCI
12 12/9/2005 CT Surgery Consult
13 12/9/2005 Pre-Surgery
14 12/9/2005 Cardiology Dischar
15 12/12/2005 InPatient Stay
16 12/12/2005 History
17 12/12/2005 CT Surgery
18 12/12/2005 Anesthesia
19 12/12/2005 Post Operation
20 12/18/2005 CT Discharge
CT Surgery
14 -- Operative Note
File Edit View Insert Style Colors Paragraph Format Tools
OPERATION:
Transesophogeal echocardiography
Tricuspid No performed
Mitral No performed
4 Vessel Coronary Artery Bypass Grafting with
Left Internal Mammary Artery to the Left Anterior Descending Coronary Artery
Constructed "Y" Left Internal Mammary Artery to the Posterior Descending Coron
Constructed "Y" Saphenous Vein to the Right Coronary Artery
Saphenous Vein to the Third Obtuse Marginal Coronary Artery
Radial Endoscopic harvest
Incidence: First re-op cardiovascular surgery
Priority: Elective
ANESTHESIA: General
DESCRIPTION OF OPERATION: After induction of anesthesia, the patient wa
Transesophogeal echocardiography revealed Dyskinetic left ventricular function. T
insufficiency in the Aortic valve. There was moderate stenosis in the Aortic valve.
Page 1 1/3
Line 1, Col 1
NUM
CAPS
Sign Document
Present / entire procedure
MDCriticalPresence
STS Audit
OPNOTE COMPLETED

FIGURE 1.2. The Electronic Medical Record (EMR). An EMR system in a physician's office uses electronic charting, which promotes a clear, accurate record of patient care as opposed to a paper chart. Reprinted with permission from MediNotes Corporation, West Des Moines, IA.

for each person contained in one repository. This interoperable, multi-provider, multi-speciality, and multi-disciplined electronic record is the organized collection of *all* records about an individual stored in the computer systems and databases of *all* the providers who have cared for that patient, including data documented during hospital stays, such as operative notes, laboratory data, and imaging studies. An individual's electronic health record is assembled using data supplied by the patient's doctors and other providers, making every form of clinical information available in a standardized electronic format. The EHR environment relies on functional EMRs that allow medical providers and organizations to exchange information with other providers within the community, the region, or even the nation.

The concept of an electronic patient record originated in the early 1990s with the growing popularity of the desktop computer, but high cost and the lack of uniform technological standards prevented the widespread use of this system. The advent of high-tech digital and specially-coded technology, high-speed Internet access, and more cost-effective options in the field of electronics have combined to make the use of an EMR/EHR system a viable option for the majority of healthcare providers.

The mandate to create a national patient record electronic database was signed into law in 2005 by the Bush administration. The purpose of the EHR is to automate and streamline the flow of a patient's medical information from all healthcare providers into one repository accessible by all the patient's providers. Patients would have access to, and ultimate control over, the contents of their medical records. Under this system, when a patient who has authorized the use of an EHR sees a new physician or other healthcare provider, the patient's entire medical history, including all current and past conditions, treatments, and medications, would be available to the new physician through the EHR database.

The EHR enables continuity of care among all of a patient's medical providers. Typically, patient information moves between providers by mail, phone, or fax, or it may even be hand-carried by the patient. Each provider a patient sees creates a separate set of records in a chart that includes scribbled phone messages, handwritten physician notes, and laboratory reports. The older or more ill the patient, the thicker the folder is likely to be, and the more jumbled and confusing the information becomes. Frequently this results in incomplete and contradictory reports in the records of the different medical providers.

The proposed system reduces the need for physicians to buy new hardware or software and makes maintaining the EHR much simpler. A portal, or single sign-on point of access via the Internet, enables the provider to locate a patient's information on a web-based company's site and allows the information to be displayed within a set of pages that the user can view in a browser. The patient's privacy and security of information is maintained and protected through the use of special coding and other technical tools that specify the names of the patient's physicians who have been granted access to the record.

Using the EHR's search and analysis tools, all of the patient's healthcare providers have access to the patient's complete medical record 24 hours a day. This eliminates the delays that can result when a patient's record has to be pulled and sent by fax. A physician can review and edit information online, have electronic signature capability, and distribute the requested information via secure e-mail. The record is not stored on any individual computer, but is assembled from the information in the database when accessed in a provider's computer memory for viewing purposes; it does not remain accessible on a provider's computer after the provider has logged off the main database.

In addition, when properly configured, the EHR can provide tailored alerts and notices to help healthcare professionals provide the most appropriate treatments. The EHR program has the ability to search all information in a patient's record and, based on the latest medical practices, can alert the healthcare provider to additional factors he or she may consider when making treatment decisions. For example, an EHR might alert a physician to an allergy to a particular medication being prescribed or identify the need for additional tests prior to making a diagnosis or treatment recommendation based on the patient's history or family history.

Evidence consistently shows that paper-based medical record systems do not provide the sufficiently safe, high-quality, and cost-effective exchange of patient information required in today's healthcare environment. Computer-based records are quickly replacing their paper-based counterparts as the consumer and political demand for change becomes stronger.

PATIENT CONFIDENTIALITY, HIPAA, AND HITECH

Confidentiality always has been, and always should be, central to the relationship between the patient and his or her healthcare provider. The **Health Insurance Portability and Accountability Act of 1996** (HIPAA, pronounced *HIP-aa*) is perhaps the single most significant piece of federal legislation affecting the healthcare industry since the inception of Medicare. The primary purpose of HIPAA was to ensure the portability and continuity of health insurance coverage if a person changed jobs, but it also gives patients greater access to their own medical records and more control over how their personally identifiable health information is used.

HIPAA also addresses the obligations of healthcare providers and health plans to provide privacy of health information transactions and for the confidentiality and security of patient data.

Part of HIPAA's provisions require the US Department of Health and Human Services (DHHS) to provide safeguards to protect individuals from having their private health information made available to whomever requests it. The DHHS wrote the **Security Rule** and the **Privacy Rule** as part of HIPAA to publicize standards for the privacy of all health information. The goal of the Security Rule is to protect personal information while still allowing for the efficient flow of health information needed to treat patients effectively. The Privacy Rule requires covered entities to protect individuals' health records and other identifiable health information by requiring appropriate safeguards to protect privacy and by setting limits and conditions on the uses and disclosures that may be made of such information. It also gives individuals certain rights with respect to their health information. These rules apply to health plans, healthcare clearinghouses, and those healthcare providers who conduct electronically certain financial and administrative transactions that are subject to the transactions standards adopted by the DHHS.

The Privacy Rule has reformed the industry's management of healthcare insurance, mandating that all insurance claims follow the same format, thereby simplifying administrative paperwork. More important, due to the enormous increase in the electronic transmission of health information, these federal privacy and security regulations enhance the privacy protections and security measures for health information. These provisions require healthcare plans and providers to establish procedural, administrative, and record-keeping policies that protect against misuse of an individual's health information, including protection against the improper use or disclosure of such information in any format—oral, written, or electronic. MTs are subject to the requirements set forth under HIPAA's Privacy Rule because they perform a function on behalf of healthcare providers that includes the use and disclosure of a patient's medical information. As a medical transcriptionist, you are required by the Privacy Rule to give every sincere, willful effort to preserve, protect, and defend the privacy and confidentiality of the records (audio files, transcribed reports, patient and/or job log sheets, etc.) that you handle during the transcription process, and to prevent theft or loss of this information while that information is in your possession or being transmitted to or from you.

In February 2009, as part of the American Recovery and Reinvestment Act of 2009 (ARRA), President Obama signed the Health Information Technology for Economic and Clinical Health (HITECH) Act, providing government funding to encourage the widespread adoption of the EHR in US healthcare systems. The Act has spurred the adoption of EHR systems across the country, which in turn improves coordination of patient care by increasing patient safety and reducing errors. The HITECH Act, devised by Congress primarily to address the adoption of electronic medical records nationwide, has added a tough data-breach notification requirement to the long list of HIPAA privacy rules. Together, both laws provide for punishments and fines by the US Department of Health and Human Services and the Federal Trade Commission (FTC) against organizations and other providers (as defined under HIPAA) who violate the rules regarding the breach of such information.

Medical transcriptionists and medical transcription services are regarded under the Act as **business associates**. The Act defines a business associate to include persons who, on behalf of a covered entity (but other than as members of the covered entity's workforce), perform or assist in performing a function or activity that involves the use or disclosure of individually identifiable health information. This includes transcription services, billing services, attorneys, accountants, technology vendors, and many other types of businesses that are directly regulated by the Act and by HIPAA. While not subjecting business associates to all of the obligations of covered entities (such as providing privacy notices), the Act requires them to comply with the HIPAA provisions mandating administrative, physical, and technical safeguards of patient information.

Whether working at home or in an on-site office, a competent MT recognizes the importance of patient confidentiality even without the provisions required by HIPAA and the HITECH Act. Most transcription services or companies have administrative and technical safeguards in place to protect patient confidentiality, but it is vital that an MT, especially one working at home, take the security of the patient record seriously. The following guidelines will help you to protect the privacy and electronic security of the health information at an individual workstation and to adhere to regulations set forth by HIPAA and the HITECH Act. Some points seem silly or over-compensating, but you would not want to be involved in any breach that is interpreted as willful neglect or noncompliance on your part under the federal guidelines.

1. If you transcribe from home, separate your workspace or office space from the rest of the home and restrict access by visitors and family members. If other family members do have access to your work area, discourage them from physically accessing your computer, which should be used for transcription alone.
2. Create strong passwords for all computers, including laptops, that are used for work purposes to discourage unauthorized access to your machine. Use passwords containing upper and lowercase letters,

numbers, and symbols with a length of more than 14 characters to ensure the highest security. Commit the password to memory and do not share it with anyone. Change the password periodically.
3. Do not have family members or friends help you with your work. Requests such as, "Honey, can you listen to this dictation and tell me what the doctor said?" or "Son, can you drop this completed work off at my employer's office on your way to football practice?" can jeopardize the confidentiality of a patient's information.
4. Log off the computer when leaving your workstation, or protect your files by using a screen saver that comes on after five minutes of inactivity, protected by a screen saver password.
5. Ensure that the computer display with access to patient information is not visible to unauthorized individuals.
6. Never leave sensitive or confidential information in a trash can. Do not write down patient details on papers or sticky notes at your desk. If you must write down the information, destroy the papers that contain patient information by using a document shredder.
7. Keep confidential patient information out of sight. Place this information in a locked file drawer or cabinet when not in use.
8. Avoid copying patient data to a personal laptop computer, any removable devices like a flash drive, external hard drive, CDs, DVDs, etc., as there is a chance that these devices could get lost or stolen.
9. Know how to protect your computer system. Firewalls, spyware protection, and virus protection programs should be a part of your vocabulary and areas of expertise. Nothing can be worse than having confidential patient information stolen by a computer hacker or an entire system brought down by the latest deadly computer virus.

When using communication resources such as e-mail, the fax machine, or the telephone, observe the following guidelines:

1. Assume that e-mail systems are not secure unless the messages will be transmitted in a special code that cannot be intercepted by others when they are sent. In any case, take precautions and use common sense when sending e-mail. Do not send confidential information unless the patient's identity has been blocked or removed. Do not send attachments with e-mails that are not specially coded to prevent being intercepted or read by others during transit.
2. Create a confidential message footer for e-mail messages, such as:
   NOTICE: This electronic mail communication contains confidential information intended only for the person(s) designated above. Any use, distribution, reproduction, or disclosure, or any other use of this transmission by any party is strictly prohibited. If you are not the intended recipient of this e-mail, promptly and securely delete it and all attachments.
3. Do not reveal any patient details or send voice or transcribed files, patient logs, or any other such individually identifiable patient health information through an instant-messenger window or cell phone text-message feature.
4. Limit access to voice mail or answering machines so that other family members do not access patient health information that may be left there. Take care in wording messages you leave on answering machines or voice mail.
5. Exercise care if using a speaker phone; be aware of the sensitive nature of conversations and of messages that may be overheard.
6. When using a fax machine, never fax information to an unsecured fax machine. Call ahead to ensure that the intended recipient will be on-hand to pick up the fax. Double-check the destination fax number before sending the fax. Use a fax cover sheet containing the previously noted confidentiality statement that is used for electronic transmissions.

Finally, respecting patient privacy and confidentiality includes the awareness that conversations might be overheard by others. Do not share information about patient reports with others, not even family or friends. The same precaution should be applied to online forums, message boards, Facebook, Twitter, and other places where confidential information could be seen or heard by others. Most issues of broken confidentiality result from MTs talking to friends about an unusual medical problem encountered in a patient's record. There is a remote, although real, possibility that a friend or relative of the patient could overhear the discussion, or that the person to whom the story is told could spread the news further.

The civil penalties for violations of HIPAA and HITECH include high monetary fines. There are also federal criminal penalties that include jail time for health-plan employees and providers and other employees who knowingly and improperly disclose patient information under false pretenses; and these penalties are even higher if such disclosure is used for monetary gain. Therefore, all MTs, even those who work at home, must make every effort to comply with all security regulations.

WORK ENVIRONMENTS

MTs may choose among a wide variety of work environments and opportunities for advancement. Many MTs are employed in settings such as hospitals, physicians' offices, clinics, laboratories, medical libraries, and government medical facilities. Full-time transcriptionists

work a 40-hour week, although some work irregular schedules, such as swing or graveyard shifts, part-time, or on-call. Self-employed and home-based MTs have more flexible hours. Some transcriptionists work only on an on-call basis, depending on the amount of work needed to be done. Fringe benefits may include paid vacation, holidays, sick leave, medical insurance, and pension plans; however, transcriptionists who work only on-call and self-employed transcriptionists usually do not get these benefits.

Hospitals and Clinics

There are solid advantages associated with a position in a hospital or other healthcare institution. A new transcriptionist may find it more comfortable to work in a setting that offers the security of a supervisor on-hand to provide assistance if needed. In addition, it might be easier for a new MT to find work in a local hospital or large clinic. Because many qualified MTs work at home, hospitals and other institutions encounter difficulties in hiring capable employees and so are often willing to train new MT graduates in-house. Institutional employees may also enjoy better quality benefits, including health insurance, sick leave, and overtime. Finally, many people enjoy working in an office where they can interact daily with other people, create new friendships, and be involved in various employee functions and social events. MTs who work at home sometimes feel isolated from their peers.

Working at Home

Most MTs work at home, and this type of work is a dream for many people. There are also advantages to this form of work. Vast improvements in both computing and communications technology make it fast, efficient, and relatively inexpensive for medical institutions to contract work outside of their facilities. Therefore, an increasing number of MTs now work from home as employees or subcontractors for hospitals and transcription services, or as self-employed independent contractors. Those MTs with children find they can work their schedules around school, activities, meals, or naps. Working from home allows for greater flexibility in a work schedule as sometimes it is not necessary to conform to a brick-and-mortar facility's workday or preset hours. The savings in not having to commute to an office, maintain a business wardrobe, purchase meals outside the home, or pay for parking can add up quickly. In fact, many people are attracted to the medical transcription industry because it offers this unique opportunity to manage time and money to their advantage by working from their homes.

However, working at home has its own inherent issues to overcome in order to successfully work in this environment. In many cases, the MT is responsible for having his or her own equipment, which might include a computer, Internet access, keyboard, desk, chair, foot pedal, headset, mouse, reference materials, and lighting. In addition, the issue of establishing boundaries is

QUICK CHECK 1.2

Circle the letter corresponding to the best answer to the following questions.

1. An individual's health record maintained electronically is referred to as an
   A. EGD.
   B. EHR.
   C. ERR.
   D. EER.

2. When leaving your workstation, you should take the following action with respect to your computer
   A. log off.
   B. set the password.
   C. log in.
   D. turn off the computer.

3. The civil penalties for violations of HIPAA include
   A. an IRS audit.
   B. a reprimand from the boss.
   C. getting fired.
   D. monetary fines.

4. A fax sheet transmitting patient information should contain
   A. the patient's medical record number.
   B. your workstation number.
   C. a photo of the patient.
   D. a confidentiality statement.

5. A patient's EHR record is stored
   A. at the physician's office.
   B. in the physician's car.
   C. in a remote database.
   D. in the hospital file room.

probably the biggest hurdle for an at-home MT to learn. There may be distractions abound with family members who do not always understand that a home employee has a work schedule like an on-site employee. Telephone calls from friends, the needs and priorities of children, or even the lure of the television can interfere with productivity. The same smart work habits that spell success for any job, such as being focused, self-disciplined, self-motivated, and self-starting, apply to the at-home MT as they do the on-site one.

In whatever work environment, either at an office or at home, MTs usually work alone at individual workstations. A great degree of concentration and care are essential because of the potentially serious consequences transcription errors might have for a patient's care. Speed is also required for prompt placement of information in hospital reports or in patients' charts. Production standards are often set by employers for performance evaluation, and some employers base pay on production if the transcriptionist is not paid an hourly wage or straight salary.

PROFESSIONAL AFFILIATION

One of the important things you can do to enhance your career, either while a student or after completing training, is to join a professional association of MT peers. Since its inception in 1978, the **Association for Healthcare Documentation Integrity** (AHDI) is the organization that represents the interests of MTs and other healthcare documentation providers. AHDI sets standards of practice and offers medical transcription program approval, which encourages compliance with *AHDI's Model Curriculum* for Medical Transcription. In addition to establishing a code of ethics for MTs, the association administers credentialing programs and advocates on behalf of the profession with governmental and regulatory agencies.

Belonging to the national organization, as well as to regional and local chapters, will help you meet other MTs and make new friends while keeping up to date on the latest trends in the industry. AHDI, as well as its state and local components, provides magazines and newsletters for members that focus on continuing medical education as well as industry news, events, and articles of interest to MTs. AHDI emphasizes continuing education for its members and holds an annual conference for MTs, educators, supervisors and managers, and business owners. The association's local and state component associations also hold regular educational meetings and symposia. MTs receive quality medical education from local speakers at area and state meetings and have opportunities to learn about the newest trends in medicine and technology from guest speakers.

Mentoring programs are in place to help guide new transcriptionists in their career aspirations. Meetings and seminars provide opportunities for MTs to socialize and network with each other, making connections that help further individual careers. At many of these meetings, vendors exhibit products and services of interest to MTs or provide an opportunity for MTs to speak with company representatives about potential employment.

In the past, an MT's credential was simply a personal bonus or a "trophy" awarded for hard work and a willingness to pursue continuing education as the industry grew. However, the ongoing evolution of new technology in healthcare documentation as well as the global outsourcing of work has made education and credentialing a critical factor in achieving professional excellence. AHDI endorses credentialing to protect the public interest by promoting high professional and ethical standards and to recognize those MTs who demonstrate competency in medical transcription through the fulfillment of stated requirements. AHDI offers two credentials: **Registered Medical Transcriptionist** (RMT) and **Certified Medical Transcriptionist** (CMT), as well as one designation: **Fellow of the Association for Healthcare Documentation Integrity** (AHDI-F).

Registered Medical Transcriptionist

The RMT examination, first offered in 2006, is designed to assess competency in core knowledge and skills needed to practice medical transcription. Unlike the CMT exam, described later in this chapter, this exam will allow recent graduates of a transcription program to measure their level of competency in the field. The test is designed to cover basic core knowledge of anatomy and physiology, medical terminology, proper use of English language and grammar, disease processes, and medicolegal issues pertaining to the healthcare record. This exam was developed for new medical transcription program graduates and for MTs who do not have the years or variety of experience to be eligible for the CMT exam.

The first section of the exam is a set of multiple-choice questions covering topics such as medical language (prefixes, suffixes, root woods, terminology, and spelling), anatomy and physiology, disease processes, English language and usage, and confidentiality issues. The second half of the exam covers transcription performance. The audio portions to be transcribed are very short, usually no longer than a sentence. Other questions in this section refer to the audio and require editing or proofreading against it. If an MT fails the test, he or she is eligible to retake it after six months. Earning this credential illustrates that a person is a trained MT and has the base of knowledge required to perform well in a new job.

Certified Medical Transcriptionist

The CMT exam tests an MT in areas covering both medical transcription knowledge and transcription performance.

QUICK CHECK 1.3

Fill in the blanks of the following sentences.

1. The year AHDI first began was _____.
2. To become a Fellow, a medical transcriptionist must be an AHDI member in _____.
3. CMT is an abbreviation for _____.
4. The only organization that represents the interests of medical transcriptionists is the _____.
5. A CMT must recertify every _____ years.

At least two years of transcription experience in the acute care (or equivalent) setting is strongly recommended to take the CMT examination in order to allow for sufficient time to acquire a wide range of knowledge pertaining to specialty fields. For exam purposes, "acute care" is defined as incorporating medical center dictation to include many dictators, including a variety of English-as-a-second-language (ESL) dictators, many formats and report types. It encompasses all the major specialties as well as surgery dictation of all types, and some minor specialties.

Like the RMT exam, the CMT exam consists of both medical transcription-related knowledge items and transcription performance items. The transcription performance items include transcribing dictation, editing, and proofreading. If one does not pass the exam, a report will be given, indicating the objective areas where improvement is needed. Once a medical transcriptionist has achieved the CMT credential, he or she is required to maintain certification. In order to maintain certification, a certified medical transcriptionist must earn a minimum of 30 continuing education credits in each three-year cycle and pay a recredentialing fee. AHDI's recredentialing policies can be found at www.ahdionline.org.

AHDI's purpose in offering the CMT credential is to promote high professional and ethical standards, to improve the practice of medical transcription, and to recognize those professionals who demonstrate their competency in medical transcription through the fulfillment of stated requirements. Although credentialing is not mandatory to obtain employment, it conveys an elevated level of value to prospective employers. Because the exam is challenging and extensively tests the skills of an MT, the CMT credential tells an employer that the individual is knowledgeable about the profession and motivated to increase his or her knowledge of medicine and improve transcription skills.

AHDI Fellowship

AHDI also provides the opportunity for experienced MTs to earn the AHDI-F (Fellow of the Association for Healthcare Documentation Integrity) designation, which recognizes an MT's involvement in both work-related and community activities. This designation requires an MT to broaden his or her experience and to get involved in mentoring, community activities, and association events.

To become a Fellow, an MT must be member in good standing with AHDI and must earn a specific number of "points" for activities performed in different service categories in the five years preceding the application. These categories include membership in AHDI, attendance at professional meetings, obtaining CMT certification, writing articles for AHDI or other publications, and making presentations, acting as a mentor, demonstrating leadership skills, and being involved in civic activities.

CHAPTER SUMMARY

Medical transcription, like medicine itself, is both a science and an art. It is one of the most sophisticated of the allied health professions, creating an important partnership between healthcare providers and those who document patient care. There is no question that the work of a qualified MT has a significant impact on the quality of the documentation of care provided by a healthcare facility. Medical records are the foundation of health care and serve as a main medical reference for all healthcare decisions made by a patient and his or her physicians. MTs take great pride in producing these documents with timeliness, accuracy, and, of course, confidentiality.

·I·N·S·I·G·H·T·

Lessons from Katrina

Major weather events such as Hurricane Katrina, which struck New Orleans in 2005, were the wake-up call for anyone who questioned the need for electronic health records (EHRs). Floods from Katrina destroyed the medical records of hundreds of patients along the Central Gulf Coast of the United States because they were written on paper and stored in boxes in hospitals and physicians' offices. In addition, there were no records available to help identify the bodies of the victims. The government has now enacted legislation requiring EHRs to be a part of our national healthcare system.

ABBREVIATIONS

Abbreviation	*Meaning*
AHDI	Association for Healthcare Documentation Integrity
AHDI-F	Fellow of the Association for Healthcare Documentation Integrity
ARRA	American Recovery and Reinvestment Act of 2009
CMT	Certified Medical Transcriptionist
DHHS	Department of Health and Human Services
EHR	electronic health record
EMR	electronic medical record
FDA	Food and Drug Administration
FTC	Federal Trade Commission
HIPAA	Health Insurance Portability and Accountability Act of 1996
HITECH	Health Information Technology for Economic and Clinical Health (Act)
RMT	Registered Medical Transcriptionist

Add Your Own Abbreviations Here:

TERMINOLOGY

Term	*Meaning*
Association for Healthcare Documentation Integrity (AHDI, formerly American Association for Medical Transcription, AAMT)	The organization that represents the interests of medical transcriptionists and other healthcare documentation providers.
business associate	Persons who, on behalf of a covered entity (but other than as members of the covered entity's workforce), perform or assist in performing a function or activity that involves the use or disclosure of individually identifiable health information, such as transcription services, billing services, attorneys, accountants, technology vendors, and many other types of businesses that are directly regulated by the HITECH Act and by HIPAA.
Certified Medical Transcriptionist (CMT)	A designation awarded by AHDI to those with greater than two years of experience in the field, who earn a passing score on a credentialing examination.
dictation	Speech that is put into written form.
electronic health record (EHR)	A secure, real-time electronic record of a patient's medical and health information generated by one or more encounters in any care-delivery setting, such as a hospital, doctor's office, or clinic.
electronic medical record (EMR)	An individual application repository of a patient's medical encounters with one provider consisting of the provider's documentation of encounters with that patient.
ethics	The norms for conduct that distinguish between acceptable and unacceptable behavior.
Fellow of the Association for Healthcare Documentation Integrity (AHDI-F)	A designation awarded by AHDI that signifies a balance of successful activities in the medical transcription profession in a variety of core areas involving practice duties, professional experience, leadership, and community involvement.
Health Insurance Portability and Accountability Act of 1996 (HIPAA)	A federal law that ensures the continuity of health insurance coverage if a person changes jobs, but also provides a national standard for the privacy of health information transactions and the confidentiality and security of patient data.
Health Information Technology for Economic and Clinical Health (HITECH) Act	An Act of Congress that has spurred the adoption of EHR systems across the country, which in turn, improve coordination of patient care by increasing patient safety and reducing errors.
Hippocratic Oath	A writing that outlines certain guidelines of ethical conduct to be taken by physicians.
medical provider	A term referring to a physician or other healthcare professional.
medical record	A series of documents that track a patient's medical history.
medical transcriptionist	A person who transcribes medical reports.
Privacy Rule	A provision of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) that mandates nationwide standards to protect private health information.
provider	A shortened term for *medical provider*.
Registered Medical Transcriptionist (RMT)	A designation awarded by the AHDI to those with less than two years of experience in the field who earn a passing score on a credentialing examination.
scribe	A person employed to copy and interpret the spoken word of others.

Term	*Meaning*
stenographer	A person skilled in the transcription of speech.
transcribed	Information that is taken down in writing which has been dictated or recorded.

Add Your Own Terms and Definitions Here:

REVIEW QUESTIONS

1. How do the provisions of HIPAA affect medical transcriptionists?
2. What is the Hippocratic Oath?
3. What issues caused Congress to pass the HIPAA in 1996?
4. Why is it important for a medical transcriptionist to have strong listening skills?
5. What are the advantages of implementing an EHR system? Can you think of any disadvantages to such a system?
6. What are three skills needed to be a successful medical transcriptionist?
7. What is the recommended amount of time for a medical transcriptionist to work in the field before taking the CMT exam? The RMT exam?
8. How is the AHDI-F designation different from the CMT credential?
9. How will voice recognition technology affect the medical transcriptionist in the future?
10. Compare the advantages of working in a hospital or clinic-based setting to the advantages of working at home.

CHAPTER ACTIVITIES

Fill In The Blanks

Fill in the blanks with the correct answers.

1. _____ is an Act passed by Congress that provides a national standard for the privacy of health information transactions and confidentiality and security of patient data.
2. A _____ is a person who listens to the dictated recordings made by physicians and other healthcare professionals and transcribes them into patient reports.
3. Physicians and other healthcare professionals are commonly called _____.
4. The _____ is a secure, real-time electronic record of a patient's medical and health information generated by one or more encounters in any care-delivery setting,
5. The _____ provision of HIPAA requires healthcare plans and providers to establish procedural, administrative, and record-keeping policies that protect against misuse of an individual's health information.
6. The collective word for speech that is converted to written text by a medical transcriptionist is known as _____ .
7. A medical transcriptionist with acute care experience can take the _____ exam.
8. In ancient times, a person who could read and write was referred to as a _____.
9. _____ is the professional association that represents the interests of medical transcriptionists.
10. "Involvement in civic activities" is one of the categories of the _____ designation.

Multiple Choice

Circle the letter corresponding to the best answer for the questions below.

1. A breach of patient confidentiality can take place
   A. when an MT listens to the dictation through a headset.
   B. when the MT's computer is turned off.
   C. when a physician dictates a patient's report into the MT's answering machine.
   D. when the door to the MT's office is locked.

2. HIPAA stands for
   A. Health Insurance Portability and Accountability Act.
   B. Health Information Portability and Accident Act.
   C. Health Insurance Portability and Affordability Act.
   D. Health Installment Payment and Affordability Act.

3. An MT's home-based computer is not secure if
   A. the computer is used by the entire family.
   B. the computer is password protected.
   C. the computer is kept in a locked cabinet.
   D. none of the above.

4. What is NOT an advantage of an EHR system?
   A. the ability to provide tailored alerts and notices to providers
   B. convenient access to the patient's records at any time
   C. continuity of care
   D. the ability to share a patient's medical information with anyone over the Internet

5. A medical transcriptionist
   A. is a kind of medical provider.
   B. converts dictated medical information into readable text.
   C. is permitted to show her family a patient's medical reports if working at home.
   D. does not need to know how to punctuate a sentence; the computer does that automatically.

6. A medical transcriptionist should strive to maintain a typing speed of
   A. 50 wpm or less.
   B. 60 wpm or greater.
   C. exactly 45 wpm.
   D. up to 60 wpm.

7. What qualification must a medical transcriptionist possess?
   A. excellent listening skills
   B. the ability to talk fast
   C. a two-year college degree
   D. the ability to dictate according to company requirements

8. When did medical transcription originate as a profession?
   A. in the Egyptian era
   B. during the Middle Ages
   C. in the 1900s
   D. in the year 2000

9. One advantage of working in a hospital or clinic is
   A. the ability to work around the kids' ball games.
   B. more flexibility in work schedules.
   C. the savings in gas and wear-and-tear on the car.
   D. more social contact with co-workers.

10. The original Hippocratic Oath was translated from
    A. English.
    B. Latin.
    C. German.
    D. Greek.

2

TECHNOLOGY, TOOLS, AND TECHNIQUES

OBJECTIVES

After completing this chapter, you will be able to:

- Identify the basic components of a computer and explain how the computer processes and stores information.
- Describe different computer systems and the software applications used with each.
- Describe different methods of dictating, transcribing, and submitting work via the Internet.
- Identify reference tools most often accessed by medical transcriptionists and explain how each is used in the preparation of reports.
- Compare special word-processing features used by medical transcriptionists to aid in producing work more efficiently.

INTRODUCTION

Can you imagine a world without computers? Computers have changed everyday life in infinite ways that we would have never imagined 50 years ago. Not long ago, computers were primarily used to compute statistics and communication parameters for the military or those in higher education. The introduction of the first desktop computer by IBM in the 1980s changed the world's information-processing capabilities forever. Predictably, the computer has become one of the most valuable assets in both home and business communications. Software programs, also called **applications**, are sets of instructions that enable the computer to perform a variety of tasks, such as word processing, accounting, or creating spreadsheets and graphic designs.

The growth of information technology has had significant ramifications for the role of the medical transcriptionist, as the computer and printer quickly replaced the typewriter and carbon paper. A medical transcriptionist's work now revolves around the computer and the speed in which it can create, store, and transmit medical documents.

A medical transcriptionist produces a tremendous number of medical reports and other documents on a daily basis; therefore, powerful computers are essential tools of the trade. It is vital for medical transcriptionists to have a thorough understanding of the basic physical makeup of a personal computer and to understand some of the basic concepts of information technology to use this powerful tool effectively. Familiarity with the process of data storage and memory, the context for computer-based software applications in medical transcription, and the use of information networks in facilitating the production, storage, and retrieval of medical

documents will help you attain maximum efficiency in producing a larger number of documents in a shorter period of time.

UNDERSTANDING INFORMATION TECHNOLOGY

Information technology (IT) is the general term that refers to the processing, storage, and/or transfer of information via the computer. A computer is really not one machine or device, but actually a system of many parts working together to store and process information. Computers work by analyzing and processing data according to a set of instructions (a program). **Data** is a collective term that encompasses facts and information. Data are entered, stored, and manipulated by the computer to provide information to the user.

Hardware

Computer hardware (or simply **hardware**) is the term used to describe the equipment that makes up the computer system. These are the physical parts of the system that you can see and touch and that allow information to be entered and retrieved from the computer. Many parts of the computer are housed in a case, sometimes referred to as the **tower**. The case usually stands on a desk or the floor and contains the circuitry needed for the computer to operate. Inside the computer, the **motherboard** is a large circuit board with connections for other components of the computer. The motherboard allows these components to exchange data. The **central processing unit** (CPU) is a small but very advanced microprocessor chip that sits on the motherboard. It processes data that is entered into the computer.

Almost every part of the computer provides data or receives data from the CPU and is connected to the computer case using cables. These cables plug into specific openings, called **ports**, typically located on the back of the case. The standard connector that plugs into these ports is called a **universal serial bus** (USB) connection. USB connectors allow you to attach every type of device quickly and easily, including headsets and foot pedals used by medical transcriptionists. The development of USB ports eliminated more cumbersome ways of connecting devices to the computer (such as special circuit boards or cards that had to be installed in the computer case itself). The USB provides a single, standardized, easy-to-use way to connect over 100 devices to a single computer.

The **mouse** is a small device used to point to and select items on your computer screen. It is connected to the computer by a long wire with a USB connection, but many newer models are wireless. A mouse typically has two buttons: a primary button (usually the left-sided button, which you "click" to select items) and a secondary button (usually on the right side of the mouse, which you "right-click" to select items). Many mice also have a wheel between the two buttons, which allows you to scroll smoothly through computer screens of information when you roll your finger across it. When you want to select an item, you point to the item and then "click" (press and release) the primary button. Pointing and clicking with your mouse is the main way to interact with your computer. You can also click on the item two times in succession, called "double-clicking," to activate the item, as when you open (or "execute") a program.

The **keyboard** is a device used mainly for typing text into your computer. Like the keyboard on a typewriter, it has keys for letters and numbers, but it also has extra keys that have special uses:

- **Function keys**, found on the top row and numbered F1 through F12, perform different functions depending on how they are used (or programmed) in different software programs.
- The **numeric keypad**, located on the right of the keyboard, which allows you to enter numbers quickly.
- The **navigation keys**, such as the arrow keys, the "home" key and "end" key, reposition your cursor quickly within a document.

The **monitor** is the device that displays viewable images generated by the computer. There are two basic types of monitors: **cathode-ray tube** (CRT) monitors and **liquid crystal display** (LCD) monitors. Both monitors produce sharp images, but the CRT monitor is large and cumbersome, whereas the LCD monitor has the advantage of being much thinner and lighter and is sometimes called a *flat screen* display monitor.

Software

Computer software (or simply **software**) refers to one or more computer programs that provide instructions to the computer to perform a particular task. Software is often divided into two categories. **Systems software** is the software that runs the computer itself. Also known as the *operating system*, this program coordinates all the data received by the computer and instructs the computer on how to process that data. It directs the flow of traffic inside the computer, telling it what to do and when to do it. In short, the operating system is the software that the rest of the software programs depend on to make the computer functional. A computer cannot function without an operating system. The operating system is activated as soon as the computer is turned on. Each time the computer is

started, the operating system is also started. Although there are a number of operating systems in use, such as the Apple operating system for MacIntosh computers, Microsoft Windows is the operating system on most computers today.

Windows gets its name from the "windows," or informational boxes, it places on the computer's monitor. Each window shows information, such as an icon, a program, or a file you might be working on. You can have several windows open, or displayed, on the computer monitor at the same time, and jump from window to window; this enables you to complete tasks faster. In addition, you can size the windows to fit your needs, from very small to full-screen. Windows controls every window and each part of the computer. When you turn on your computer, Windows also starts and supervises any running programs or tasks.

Windows, or any operating system, has three basic functions:

- It coordinates the activities of the components attached to the computer, such as the keyboard, printer, monitor, and other hardware components.
- It manages all of the information entered into the computer, storing the data and commands to ensure that it will be able to find whatever information it needs to perform optimally.
- It executes the instructions given to perform specific tasks.

Applications software, also called computer programs, consists of instructions that enable the computer to perform a specific work task such as word processing, accounting, or use of spreadsheets and databases. These instructions are written by computer programmers in a language the computer can understand, placed on a storage medium, and then sold to users to install into their computers.

How a Computer Processes Information

Processing is the "thinking" that the computer does—the calculations, comparisons, and decisions it makes based on the information entered by the user. The CPU is where this "thinking" takes place. The CPU receives instructions from the computer's software via an input device such as a keyboard, mouse, or scanner and can process many millions of instructions per second. After processing the information, the results are displayed on a monitor, or display screen. The monitor displays the current process or application of the CPU.

Storing and Transferring Data

After data is entered into a computer and processed, it must be saved to preserve its contents after the computer is shut off. **Storage** is the term used to describe the device that stores and transfers data. The computer has one or more **disk drives**, which are devices that store information on a metal or plastic disk. The disk preserves the information that can be retrieved later, even when the computer is turned off. A **hard disk drive** is a storage device that is fixed inside the computer and stores large volumes of data, which can be accessed and retrieved quickly. The drive consists of a stack of small but rigid magnetic platters (disks) in a protective casing. Data is recorded magnetically onto circular tracks on these disks and stored for later retrieval. Because the hard disk can hold massive amounts of information, it is usually the computer's primary means of storage, holding almost all of the computer's programs and files.

Files can also be saved to a **Compact Disk-Read Only Memory** (CD-ROM) drive. This disk drive reads and/or saves data to and from a **compact disk** (CD), which is a metallic disk coated with a special dye that allows data to be recorded onto it by a laser. A **Compact Disk-Recordable** (CD-R) disk allows data to be recorded, or written, onto it for backup and duplication purposes. Once the CD-R disk is placed within the computer, the laser records, or "burns," the data onto the CD. Because of this method of creating a CD, CD-R drives are capable of recording to each CD only once. Unfortunately, this means that new data cannot be added to the CD once the initial set of information is saved onto it; however, data can be read and copied from the disk if needed. A **Compact Disk-Rewritable** (CD-RW) disk, on the other hand, has the capability of both reading data and saving it to the same disk multiple times. Data can be deleted and overwritten so that the same CD can be reused to store data. CDs are advantageous in that they can be used as a removable storage medium for transporting files or transferring files from one computer to another. Although the disk drive for this medium is called a CD-ROM drive, the drives in computers today are used to both read data and record data to CDs placed in them.

A **flash drive** is a small, stick-shaped memory drive about the size of a highlighter pen, which can hold the same amount of data as dozens or more CDs. As illustrated in Figure 2.1, a flash drive, also called a *jump drive* or a *memory stick*, is very lightweight, very portable (some models are the size of your thumb and also called "thumb drives") and compatible with any computer using a Windows operating system. A flash drive has a faster transfer rate than other drives because, unlike zip drives or hard drives, it has no moving parts; it uses solid-state circuitry that can be electrically erased and reprogrammed. In addition, it does not require a separate power source or batteries. The drive is plugged into a USB port on the computer's case and Windows will automatically recognize it as an additional drive. Files can then be immediately copied onto this tiny

FIGURE 2.1. **Flash Drive.** Flash drives are so small that many people use them as key chains. Reprinted from Derek Lilly, Somerset, UK, Morguefile.com.

drive. When the transfer is completed, the drive is simply unplugged from the computer and can be carried in a pocket or on a key chain to another location.

A flash drive is useful for quickly backing up files (i.e., accounts, spreadsheets, word documents, music, and slideshows) and safely storing data away from a desktop or laptop computer. Large files can be transported to another office or computer without worrying about compatibility. And unlike a CD-R disk, the data stored on a flash drive can be edited and stored an unlimited number of times. A flash drive also includes tools to recover data, and provides system updates and diagnostic utilities. Because a flash drive has no moving parts, it is more durable than other forms of removable media (such as CD-Rs) in environments that produce a lot of dust or humidity.

COMPUTER SYSTEMS

A computer can be connected to other computers via a network or set up as a stand-alone system.

Local Area Networks

Computers in and of themselves provide tremendous benefits in terms of efficiency, but computer capability and document accessibility increase greatly when individual computers are connected to one another using a **local area network** (LAN), or *network*. A network is a large computer capable of serving a vast number of users at the same time. Users do not sit down in front of the mainframe itself; rather, they connect to it using smaller individual computers called **workstations**. A network can connect computers in one building or in separate buildings miles apart. Networks can even be found in homes, connecting the computers of different family members. Many networks today are wireless and can connect computers all over the world to transmit and receive data.

The mainframe computer that contains the hardware and technology that connects the individual computers to the system is the **file server**. The file server stores centrally shared data and programs that are used by all the individuals whose computers are attached to it. In a medical transcription setting, your computer may be connected to the file server of the medical transcription company for which you work, enabling you to send and receive reports from your employer.

Most business computers are connected to a network-based system. This enables documents, as well as hardware and software components, to be shared. For example, a document prepared by one medical transcriptionist at a hospital in California can be accessed and edited by another medical transcriptionist at a workstation in New York. Several users on the network can share the same printer or hard drive, and all can communicate with each other via electronic mail, or e-mail. Wireless LAN systems, such as those that drive the Internet, have even enabled hospitals and other healthcare providers to outsource some of their transcription needs overseas.

Smaller facilities and clinics can also use a network system to keep track of patient information. In a smaller office, a network can be used to make patient charting easier. As shown in Figure 2.2, the physician can then take an electronic tablet-type device into the exam room and enter patient information during the course of an examination. The information can then be uploaded to the patient's file on the computer, creating clear, accurate entries without the need for paper charting.

Stand-Alone Systems

In smaller physicians' offices and clinics, a **stand-alone system**, or a computer that is not connected to any other computer in the office, is the common choice. A stand-alone system includes the CPU, which contains all of the processing circuitry necessary to run the computer. Peripheral components—such as a keyboard, display screen, printer, mouse, or scanner—are attached to the CPU. The stand-alone system may be used by one employee or several, each using the system individually at different times. This type of system is usually more limited in its storage and processing facility than a network system but is often adequate to run a small clinic's document processing and payroll or calendar programs.

One advantage of a stand-alone system is the added security it can provide for private patient information. All information contained in the computer stays in one place and is not accessible from other computer workstations. In addition, a password can be applied to patient documents or to an entire software program. This controls access to the data contained in the computer, preventing other employees or even people who are not a part of the physician's medical staff, such as housekeeping personnel or outside delivery people, from accessing it.

FIGURE 2.2. **Electronic Charting.** A computer network can enable a physician to take an electronic tablet-type device into the exam room and enter patient information during the course of the patient's visit. Reprinted with permission from MediNotes Corporation, West Des Moines, IA.

COMPUTER APPLICATIONS

The computer and its software components provide an efficient system of organizing files and documents for effective management of patients' records. Over the course of a patient's medical care, which can span from birth to death, the computer is essential in preparing documents and reports, recording dates in the office calendar, maintaining patient billing records, and keeping track of telephone numbers and other important information relevant to the patient's care. Various software programs, including word-processing programs used almost exclusively by medical transcriptionists, accomplish these tasks quickly and efficiently.

Windows

Microsoft Windows is integral to the operating system of virtually all computers. Although a software program itself, **Windows** is also the platform that makes it easier to execute commands to the computer. Windows can make learning and using software programs

QUICK CHECK 2.1

Indicate whether the following sentences are true (T) or false (F).

1. The CPU is the "brains" of the computer. T F
2. Microsoft Windows is a kind of systems software. T F
3. The motherboard is responsible for processing data. T F
4. Applications software is also known as "computer programs." T F
5. The operating system has to be started separately after the computer is turned on. T F

easier because it displays graphic images, called **icons**, and pull-down menus to execute commands. Windows enables the user to run several programs simultaneously to display multiple files and to execute commands from an on-screen list of menus or graphic icons by using a mouse. Windows also provides visual features so that documents can appear on the computer screen exactly as they will when printed, eliminating the guesswork needed to format more complex documents.

Windows publishes several versions of its software, each with a unique name such as Windows 2000, Windows Millennium, Windows NP and Windows XP, Vista, and most recently, Windows 7, each with unique features to enhance computer performance and web browsing for home or business use.

When you start your computer, Windows will load automatically. The view on your screen is called the **desktop**. You can think of this area on the screen as a regular desk with a work surface. The icons on the desktop are also called **shortcuts**. The shortcut "points" to a real file on the hard drive. The name comes from the fact that by creating a shortcut to a program or file directly on the desktop, you can save time and effort searching for the file on the computer. You can double-click the shortcut to open the program, and you can also click on the icon and, holding down the left-click button on the mouse, drag it to a new position on the desktop.

The **Start button** (and the **Start menu** that pops up after pressing it) serve as the central launching point for applications and tasks. The Start menu provides a customizable nested list of programs to launch as well as a list of most recently opened documents, a way to find files and get help, and access to the system settings. There is a bar that runs across the bottom of the screen called the **Task bar**. The Task bar displays software programs that are open and running simultaneously. Every time you start a new program, the computer puts a button on the Task bar to let you know that program is running. You can use the Task bar to switch back and forth between different open programs with a simple one click of the mouse. Finally, the small bar area at the far right of the Task bar is called the **System tray**. The System tray contains miniature icons for easy access to system functions such as fax, printer, modem, sound volume, etc. You can double-click or right-click on the icon to view the details and controls of each of the system functions in the System tray.

Word-Processing Applications

Many young people today probably do not remember the days when a typewriter was used to prepare documents. Word-processing software enables people not only to mass-produce documents, but also to edit work quickly and save it for future retrieval, if needed. Word-processing programs are designed so that the appearance of documents may be easily enhanced with type styles and formatting features; formatting details that used to be difficult to manage efficiently on a typewriter, such as headers and footers, can be easily applied to any document using a word-processing program.

Microsoft (MS) Word quickly became the most popular word-processing software application because of its availability in all computer-system packages sold by retailers. Although other software manufactures have followed suit to "bundle" their programs into new computers, MS Word is by far the most commonly used program of this type. Like Windows, made by the same manufacturer, MS Word is the first software program to feature pull-down menus and text-enhancement icons that can be selected with a click of the mouse.

Microsoft published several versions of its popular word-processing software, Word, which is used almost exclusively by medical transcription companies today. Each version performs the same way, with menus, toolbars, task panes, and other menus and boxes.

In 2007, Microsoft released Word 2007. The striking difference with this version of Word compared to previous versions is its appearance, in that it displays no menus or toolbars. Replacing the menus and tool bars is a tabbed system called the Ribbon. The Ribbon contains a panel of commands that are organized into a set of tabs called the Tab Bar. Each task-oriented tab on the Tab Bar opens into a display of buttons representing groupings of tasks and their associated subtasks.

The Microsoft *Office* button replaces the traditional *File* pull-down menu of most Word programs. Clicking the *Office* button displays the *Office* button menu, a list of commands that deal with files and documents. In addition, Live Preview, a new feature of Word 2007, temporarily applies formatting on the selected text or object when you move your mouse over any of the formatting buttons. This temporary formatting is removed once the mouse pointer is moved away from the button, allowing you to preview how the text would appear without having to actually apply the formatting command. Mini toolbars appear whenever text is selected that contains the most commonly used formatting commands and other shortcuts in Word.

Medical Billing Applications

The computer is used extensively to keep track of patient billing. Medical billing software ensures that reimbursement claims are processed in a secure and efficient manner. It also tracks a patient's medical and insurance billing and accounting, showing at-a-glance information on the computer screen about a patient's charges, payments, and account adjustments.

Claims are transmitted electronically to insurance carriers using standard health insurance claim forms

and billing codes already contained in the software program. Fewer errors are committed in the billing process and computerized billing simplifies and accelerates the claims process. In addition, most medical billing software programs are compliant with the sections of HIPAA that specify increased security standards and billing formats. Upon receiving the insurance claim, the carriers process the claim and can send payment directly to the medical provider or patient, as instructed.

THE INTERNET

The Internet is a global computer network system that consists of millions of LANs and computers connected to them. No one knows exactly how many computers are connected to the Internet, but it is certain that they number in the hundreds of millions, and this number is growing.

No one is "in charge" of the Internet. There are organizations that develop technical aspects of this network and set standards for creating applications on it, but no governing body is in control. The Internet backbone, through which Internet traffic flows, is owned by private companies.

Three vital functions of the Internet are the following:

- The **World Wide Web** (WWW). Also referred to simply as the *Web*, this refers to all the web pages and web sites on the Internet that contain some form of information. The Web was created to make it easier to find information on the Internet by linking information pages together. A web site's address on the Internet is called its **Uniform Resource Locator** (URL).
- **E-mail**. This refers to the way in which messages can be sent over the Internet.
- **File Transfer Protocol** (FTP). This is the method by which files are transferred from one computer to another over the Internet.

Sometimes the terms *Internet* and *World Wide Web* are used interchangeably. However, to be strictly correct, the Internet refers to all the computers that make up the network called the Internet, and the World Wide Web refers to the pages of information that are stored on those computers.

Computers on the Internet use a **client/server architecture**. This means that the remote file server computer system provides files and services to the client user's local computer. Software can be installed on a client's computer to access and take advantage of the newest technology. In medical transcription, for example, one hospital server system can serve several of its branch hospitals located around the country. Medical transcription companies can be connected to the system in order to provide access for all of their employee transcriptionists to prepare and return reports pertaining to that hospital system.

An Internet user has access to a wide variety of services: e-mail, file transfer, vast information resources, interest-group membership, interactive collaboration, multimedia displays, real-time broadcasting, breaking news, shopping opportunities, and much more. In the medical field, the Internet enables doctors and other providers to conduct medical research without leaving the office—or, indeed, even the desk—by providing access to countless clinical trials, reports of studies in peer-reviewed medical journals, and new trends in medicine. On-line research services index a wider scope of up-to-date material and current clinical trials than that which could be found in any medical library, enabling a physician to have access to the very latest findings, protocols, and information even before they can be published and distributed in hard-copy form. Many Internet sites are devoted exclusively to specialized areas of medicine. For example, some medical research web sites help healthcare professionals and patients by providing the results of early cancer treatment trials in order to evaluate the risks and benefits of the newest therapies available.

With the advent of remote access and wireless technology, doctors have been able to use the Internet to view diagnostic images and charts or communicate with hospital staff from home or other off-site locations. However, the increased convenience was offset by the problem of protecting confidential patient information while permitting off-site healthcare providers to access the information.

The need for a solution that maintains the confidentiality and security of that information while complying with the strict privacy requirements of HIPAA led to the digital encryption of information when transmitted via the Internet. **Encryption** is a process whereby transmitted information is converted into a special coded computer language designed to protect the electronic transfer of data over the Internet. Companies that specialize in this technology create secure, encrypted connections, known as **tunnels**, between two locations, bypassing the open and often insecure public networks found on the Internet. This technology can also be used to control access within a single location to prevent unauthorized access to sensitive information on a large network. Data encryption enables healthcare providers and medical transcriptionists to use the Internet to view sensitive patient information and to receive and transmit patient reports securely.

As an MT, you may hear a term describing a company's computer system setup as VPN. A **virtual private network** (VPN) is a computer network that uses a public telecommunication infrastructure, such as the Internet, to provide remote offices or individual users with

QUICK CHECK 2.2

Circle the letter corresponding to the best answer for the following questions.

1. A computer that is not connected to any other computer in the office is called a
   A. network.
   B. computer interface.
   C. hardware device.
   D. stand-alone system.

2. _____ is a process whereby transmitted information is converted into a special coded computer language when transferring data over the Internet.
   A. Application
   B. File transfer
   C. Computing
   D. Encryption

3. Who is "in charge" of the Internet?
   A. no one
   B. each country's government
   C. the World Wide Web
   D. Microsoft

4. Most medical billing software programs are compliant with the sections of _____ that specify increased security standards and billing formats.
   A. Windows
   B. MS Word
   C. HIPAA
   D. the LAN

5. The method by which files are transferred from one computer to another over the Internet is called
   A. LAN.
   B. FTP.
   C. WWW.
   D. VR.

secure access to their organization's network. The goal of a VPN is to enable distant colleagues to access the company's secure network by using the Internet to carry the traffic, at much lower cost than a company having to expend the cost of creating leased lines and connections for each user on its network.

A VPN works by providing information security features such as authentication and confidentiality and are often used to secure traffic traveling over the Internet. This type of network enables users (such as the company's employees) to network together securely using the Internet to send and receive information by encrypting data at the sending end and decrypting it at the receiving end through special VPN tunnels. An additional level of security involves encrypting not only the data, but also the originating and receiving network addresses.

TRANSCRIPTION METHODS

Dictation has long been the standard means by which physicians document their encounters with patients. Medical transcriptionists use a variety of methods and technologies to transcribe this dictation.

Transcribing Machines

A **transcriber** is a machine that makes it possible to listen to dictated tape recordings in order to transcribe them into written documents. Although technology has progressed to allow a medical transcriptionist to transcribe dictation directly from the Internet, and some physicians prefer the information to be recorded digitally, or using no tapes, many physicians still dictate their reports onto cassette tapes. A medical transcriptionist listens to these tapes on a transcribing machine.

Transcribers have many convenient features to help make transcription fast and easy. The "Rewind" and "Fast Forward" functions move the tape recording backward and forward, respectively, pausing at each cue tone that starts a new dictated item. At the beginning of the tape, total dictation length is displayed. Alert tones play when the dictation ends, the tape recorder is broken, no tape is loaded, or some other error is detected.

Earphones, also called *headsets*, plug into a transcriber, allowing dictation to be heard. Medical transcriptionists use earphones both to hear dictation more easily and to maintain patient confidentiality. Earphones are available in a wide variety of styles and

connect directly to the computer via a USB port. The earpieces themselves vary from those that fit snugly over the ear to those that look like small microphones and rest inside the external ear canal. When using earphones to transcribe, be sure to keep them clean and sterilized between uses, as they tend to collect debris and wax.

The **foot pedal** is a device that allows the transcriptionist to keep both hands on the keyboard to type while controlling the flow of dictation played back. Like USB earphones, USB foot pedals connect directly to the computer case with the use of a USB connection. Pressing the center of the foot pedal starts the playback of dictation; removing pressure from the center of the foot pedal stops the playback. Pressing the right side of the foot pedal rewinds the dictation; pressing the left side of the foot pedal fast forwards the dictation. Most transcriber machines can be adjusted to rewind automatically every time the foot pedal is released so that a few words are repeated when the playback begins again. This feature can help to ensure that no words are omitted in the final document.

Digital Dictation Platforms

Digital dictation is the recording and storing of dictation in a digital format on a chip, disk, or computer's hard drive instead of a tape or similar media. A **transcription platform** is a software information-processing program that enables providers to dictate reports using a digital format and medical transcriptionists to retrieve, transcribe, and return those reports directly from a central computer networking system using the Internet, as illustrated in Figure 2.3. This process involves a physician dictating a report into a handheld recorder or call-in system. When the recorded dictation is ready to be retrieved by a transcriptionist or editor, the audio file is streamed securely from the platform directly to the MT who is logged onto the server. The voice and associated text files are transmitted via secure Internet connection that also complies with HIPAA standards. The dictated work is queued to the transcriptionists presently working on the system based on priority, return times, and other parameters defined by the company. Patient information and other demographics from the provider's information

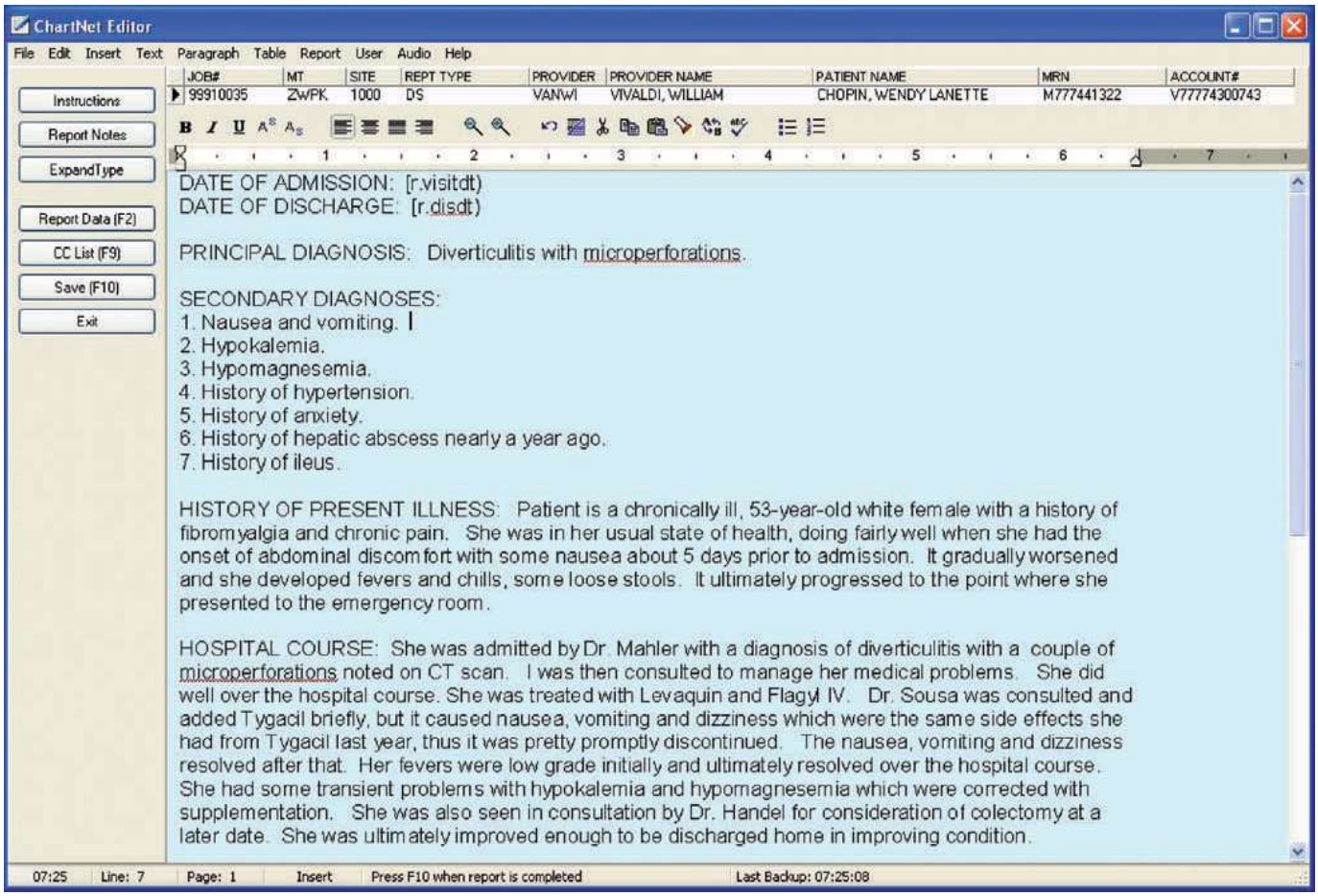
ChartNet Editor
File Edit Insert Text Paragraph Table Report User Audio Help
JOB# MT SITE REPT TYPE PROVIDER PROVIDER NAME PATIENT NAME MRN ACCOUNT#
99910035 ZWPK 1000 DS VANWI VIVALDI, WILLIAM CHOPIN, WENDY LANETTE M777441322 V77774300743
Instructions
Report Notes
ExpandType
Report Data (F2)
CC List (F9)
Save (F10)
Exit
DATE OF ADMISSION: [r.visitdt)
DATE OF DISCHARGE: [r.disdt)
PRINCIPAL DIAGNOSIS: Diverticulitis with microperforations.
SECONDARY DIAGNOSES:
1. Nausea and vomiting.
2. Hypokalemia.
3. Hypomagnesemia.
4. History of hypertension.
5. History of anxiety.
6. History of hepatic abscess nearly a year ago.
7. History of ileus.
HISTORY OF PRESENT ILLNESS: Patient is a chronically ill, 53-year-old white female with a history of fibromyalgia and chronic pain. She was in her usual state of health, doing fairly well when she had the onset of abdominal discomfort with some nausea about 5 days prior to admission. It gradually worsened and she developed fevers and chills, some loose stools. It ultimately progressed to the point where she presented to the emergency room.
HOSPITAL COURSE: She was admitted by Dr. Mahler with a diagnosis of diverticulitis with a couple of microperforations noted on CT scan. I was then consulted to manage her medical problems. She did well over the hospital course. She was treated with Levaquin and Flagyl IV. Dr. Sousa was consulted and added Tygacil briefly, but it caused nausea, vomiting and dizziness which were the same side effects she had from Tygacil last year, thus it was pretty promptly discontinued. The nausea, vomiting and dizziness resolved after that. Her fevers were low grade initially and ultimately resolved over the hospital course. She had some transient problems with hypokalemia and hypomagnesemia which were corrected with supplementation. She was also seen in consultation by Dr. Handel for consideration of colectomy at a later date. She was ultimately improved enough to be discharged home in improving condition.
07:25 Line: 7 Page: 1 Insert Press F10 when report is completed Last Backup: 07:25:08

FIGURE 2.3. Digital Dictation Platforms. A digital dictation and transcription platform, such as ChartNet® (above), enables medical transcriptionists to retrieve, transcribe, and return medical reports directly from a central system using proprietary software. Reprinted with permission from Hudson Medical Systems, Inc., Hudson, Ohio.

system are inserted into report-specific document templates automatically, saving the MT time in locating and verifying the information. The report templates may also contain headings and some routine phraseology used by the physician whose dictation is being transcribed, eliminating the need to format each and every document before transcribing the report.

With the audio file automatically queued into the platform, the dictation is ready to be transcribed. A transcribing machine is not necessary for the transcription of digital dictation, saving time in fast-forwarding and rewinding tapes to find dictation starting points. The foot pedal is attached to the computer through a USB port, and the headset plugs into the computer's speakers. Because digital dictation is easier, faster, and less expensive than older, traditional tape transcriber systems, most companies use some type of digital dictation system.

Speech-Recognition Technology

Speech-recognition technology (SRT), also called *voice recognition* (VR), allows computers with a source of sound input, such as a microphone or hand-held dictation device, to interpret human speech, word for word, for transcription of medical documents.

SRT technology combines sophisticated software and powerful computing hardware to electronically convert speech to text. There are two methods of using SRT: The first, called **front-end speech** recognition, is a process whereby speech-recognized text is generated on-screen from dictation in real-time, allowing physicians to edit and correct the final document themselves. This method generally requires the physician or dictator to continually correct the mistakes the software makes. This is because, unlike grammar-constrained and natural-language recognition, voice recognition does not possess semantic understanding. The computer, through the use of SRT, only identifies individual words; it does not "understand" what is being said and cannot evaluate the logic of the flow of words it strings together. Many words, both "regular" English and medical terms, sound alike. If the dictation system does not understand the context for one of these words, it will not be able to identify the correct spelling. SRT also tends to pick up background voices, pausative sounds like "um" and "uh," and other unnecessary verbiage that must be edited out of the report, which makes this method of SRT too cumbersome and time-consuming for physicians to use efficiently.

The second method, called **back-end SRT**, is a method in which the audio file is retrieved at some point after the actual dictating has taken place (thus, on the *back end*). The medical transcriptionist accesses the draft report created by SRT along with the corresponding audio file through the Windows platform he or she is working on, and listens to the dictation. Following along with the dictation, the medical transcriptionist makes corrections to formatting, punctuation, or grammar, and might even correct errors in medical terminology. After making these corrections in the document, the medical transcriptionist returns the edited document to the facility. The document is then re-fed into the SRT program after corrections are made so that the system can "learn" how to address such items as abbreviations or slang terms often dictated by physicians. Back-end SRT is the method used most often by the medical transcription profession.

SRT has made vast inroads into the realm of healthcare documentation, thus affecting the way medical transcriptionists perform their work. However, this technology will not eliminate the need for qualified MTs in the foreseeable future. For example, much work still needs to be done to achieve a high rate of accuracy in converting what the SRT system hears to words on paper. Because dictators all pronounce words differently, the SRT sometimes does not convert speech to text accurately, as indicated in Table 2.1. Another concern being addressed with speech recognition is the confusion that may result as SRT systems evolve and "learn" as they progress in back-end SRT. Problems can result when an abbreviation is "remembered" by the SRT program and inserted incorrectly into a future document. For example, if a physician dictates the abbreviation, *DC*, and the medical transcriptionist edited the abbreviation in context of the report to the word "discontinue," the SRT program will learn that when it hears *DC*, it means the word "discontinue," even if the context of the sentence calls for another word or phrase, such as "discharge," "dilation and curettage," "discomfort," or "dressing change." Thus, the role of the transcriptionist as proofreader and editor of the documents generated by SRT remains vital.

SRT greatly improves productivity, enabling a medical transcriptionist to produce more reports in a shorter period of time. SRT-generated documents can be edited faster than they could have been transcribed, thus producing more lines in a given period of time for the MT and the company. SRT has become so popular that speech-recognition software is included with the Windows operating system software. As this technology may relieve some of the repetitive typing for the MT in the future, the role of the transcriptionist will become more knowledge-oriented and less task-oriented.

Even with its shortcomings, SRT is destined to become part of an increasingly complex dynamic that will make up the healthcare documentation process in the future. Therefore, strive to sharpen your skills by keeping up to date on advances in SRT, learn how it is being used in the industry, and understand how it is likely to affect the work you will be doing as an MT. While you do not have to become a computer specialist, keeping abreast of technological developments will increase the potential to play an even bigger and more productive role in medical documentation delivery in the future.

TABLE 2.1 Actual Automated Speech Errors

"What Did You Say??"	
Dictated	**SRT**
"She was given Dilaudid."	"She was given a lot of dirt."
"Famvir 500 mg daily."	"Some beer 500 mg daily."
"The patient has a prostate the size of an orange."	"The patient has a prostate the size of an RN."
"Geriatric Clinic"	"genital ache clinic"
"The patient was given 250 mg of Keflex."	"The patient was given 250 grand Catholics."
"I am going to hold her Decadron until the patient . . ."	"I am going to hold her Decadron and kill the patient . . ."
"The contents of the e-mail are self-explanatory."	"The contents of this e-mail are selfish lavatory."
"I would like to refer the patient to a board-certified sleep specialist."	"I would like to refer the patient to a board-certified sleaze specialist."
"He was introverted . . ."	"He was intervertebral . . ."
". . . their relationship . . ."	". . . will he she and she . . ."

TRANSCRIPTION REFERENCES AND TOOLS

For help in the identification and appropriate use of medical terms, a medical transcriptionist refers to standard medical reference materials, both in print and electronic forms. A comprehensive reference library is essential. Although the list of available resource materials from a variety of companies is immense, most transcriptionists agree on a basic set of "must haves" for a beginner to the field.

Style Book

The ability to structure and punctuate sentences correctly is vital to the production of quality medical reports. A **style book** is a manual that provides information on medical transcription styles, forms, and grammar and usage specific to medical terms. In addition, the style book also functions as a reference for the proper use of punctuation, hyphenation, capitalization, subject-verb agreement, and basic document formatting. *The Book of Style for Medical Transcription, 3rd ed.*, is known as the "gold standard" of style manuals among medical transcriptionists and is available for purchase at the AHDI web site. It has a comprehensive index prepared by a professional indexer. Practical hints about the topics discussed are placed in the margins and examples are provided for added clarity.

Medical Dictionary

A medical dictionary is an invaluable resource for understanding the language of contemporary medicine. It provides complex definitions of terms listed in alphabetical order and includes not just words but also abbreviations, eponyms, and acronyms. Many dictionaries include illustrations and charts, and electronic medical dictionaries that are loaded onto the computer with a CD-ROM also may contain audio clips of the word to provide correction pronunciation. There are many medical dictionaries available to transcriptionists. Most contain popular features including an extensive A-to-Z list of multiple-word entries to help readers find definitions quickly, color-coded synonyms, three-dimensional art images, and examples of common diagnostic imaging methods used today.

Spell-Checker Software

A medical spell checker is invaluable to a medical transcriptionist, and there are many products on the market from which to choose. A specialized medical spell-checker program integrates thousands of medical, pharmaceutical, and other life-science words into the standard spell checker of MS Word or other word-processing programs. The spell checker verifies correctly spelled words and provides suggested spellings for incorrectly spelled words. Some spell checkers also allow users to verify the spelling of a medical or pharmaceutical term by phonetic or typographical search while typing. Wild card keys of "?," indicating a one-letter wildcard character, or "*" for multiple characters, can be inserted into the spell checker to look up words that match the possible spelling of a word. Most spell checkers will also flag words that should be capitalized, such as days of the week or brand names as opposed to generic names of drugs.

TRANSCRIPTION TIP:

Be aware of words that a spell checker can miss. For example, "tis" is often mistyped for the word "this." The word "tis" will pass spell check but is often a typographical error for the word "this" in a sentence.

Text-Expanding Software

Text-expanding software programs can assist in the preparation of the large volume of dictation medical transcriptionists typically produce, while helping the transcriptionist avoid repetitive stress injury to wrists and/or hands from high-volume typing. These programs can reduce the number of actual keystrokes by up to 70%, enabling a medical transcriptionist to prepare more documents in a shorter period of time.

These programs go one step further than the AutoCorrect and AutoText features available in MS Word, but they work on the same principle. They automatically expand certain keystroke combinations into whatever word, phrase, sentence, or paragraph is assigned to that keystroke combination. However, unlike MS Word, in which the number of keystrokes allowed for AutoCorrect or AutoText is limited by the program's memory capabilities, there is virtually no limit to the numbers of entries that can be entered into the software. For example, the typed letters "cwc" might expand into the words "chest was clear." A typical sentence, "text expanded," could read as follows:

Original sentence: "SUBJECTIVE: This 67-year-old male with a history of cirrhosis, which is complicated by ascites and encephalopathy, presents for followup." Using text expander: "subj. Ths 67 yom w a ho cir, wi cb asc and ence, prss for fp."

Any number/letter combination can be used. For example, *2u* could expand to read, "2 units of packed red blood cells." A text-expanding program can even be used to produce entire paragraphs, such as a patient's entire physical examination if a physician repetitively dictates the same sentences and phrases. One entry in an expander dictionary can even yield a nearly-complete report. Many text-expanding programs have a built-in library of expansions whereby the program will display a window that allows the medical transcriptionist to select from a list of pertinent words or phrases.

These programs also enable you to create more than one set of abbreviations or dictionary of entries, so you can create one for each of your different accounts and/or medical specialities. This will enable you to use the same keystroke abbreviations in several dictionaries, but the keystrokes can have a different meaning in each. For example, the entry *ster* can mean "sternocleidomastoid" for an orthopedic clinic account you might be working on but can also be used to mean "stereotactic" for a neurosurgery account you may be assigned to as well.

Strive to create as many expander entries as possible to increase your document production as much as possible. As a rule of thumb, if you hear the same word or phrase three times or more in one day, create an expander entry for it, because you will probably hear it again. Take the time to stop transcribing and create the entry while you remember it. If there is no time at that moment, jot down the word or phrase to add later. It will take time at first to create a library of entries, but if you get into the habit of creating entries each and every time you hear a repetitive word or phrase (medical or otherwise), the time saved later will be invaluable.

Although you can never have too many expander entries, be very careful to proofread your work for expansion errors. A simple typographical error could activate a text expansion entry in the wrong place that the spell checker may overlook. For example, you may have a text expansion entry for the word "carcinoma" as "ca," but miss the entry being inadvertently expanded in the sentence, "The patient was from Modesto, CARCINOMA," when you meant "CA" for California. First names are often overlooked for text expansion errors. The entry "ben" for "benign" can wind up in the patient's name, Ben Smith, or "idarubicin" for the first name Ida.

Pharmaceutical Word Books

A pharmaceutical word book, commonly called a "drug book" by medical transcriptionists, provides a comprehensive cross-referenced list of individual brand name and generic drugs, along with the usual dosages for each. Many drug books also include over-the-counter remedies, natural and homeopathic medications, investigational drugs awaiting US Food and Drug Administration (FDA) approval, chemotherapy protocols, trademarked dosage forms (such as "Diskus" or "Dosepak"), discontinued drugs, and the drug categories and classes by which each drug is classified. Some drug books also contain additional information on proper uses of the drug, side effects, and other names by which the drug is known. Some word books contain an alphabetized list of medical problems or conditions, along with a list of the drugs used for treatment. This feature is especially useful when a transcriptionist needs to verify a drug name that was dictated for a particular illness or indication but which is not readily verifiable by spelling.

Book of Abbreviations

There are countless abbreviations used in medicine. A book of abbreviations lists both common and obscure medical abbreviations, acronyms, and symbols covering all medical specialties, along with their meanings.

QUICK CHECK 2.3

Indicate which transcription reference tool would be used to locate the following.

1. What ABG stands for: _____.
2. The spelling of an antidepressant medication: _____.
3. The meaning of the word "epiphysis": _____.
4. The word "tetralogy" in order to verify spelling or validity of context usage: _____.
5. Where to place a comma after an introductory phrase: _____.

An index for reverse search is often included to help the medical transcriptionist find the correct expansion for a medical abbreviation.

Medical Word Books

Medical word books are references that list alphabetically (but do not define) specific words—including diseases, syndromes, tests, abbreviations, and eponyms—commonly used in a variety of medical specialties and laboratory procedures. There are specialty word books for specific specialities such as gastroenterology, cardiology, surgery, orthopedics, neurology, and so on. There are also specialty word books on such topics as medical equipment and laboratory tests. A word book is used to look up a word dictated in order to verify spelling and verify validity in the context being stated, not to ascertain the word's meaning.

The advantage of using a medical word book over researching a word over the Internet is, first and foremost, the trustworthiness of the source. Words in these references have been researched and verified and can be looked up quickly. An Internet search engine may produce thousands of hits for the word, as well as a variety of sources, that will require time to investigate and verify. A medical transcriptionist should have a collection of word books published by a well-known medical publishing house and specific to as many medical specialties as he or she can afford.

Internet Resources

The Internet provides hundreds of web sites that can prove useful to a medical transcriptionist who is searching for information that is not readily available in reference books. Many medical transcriptionists have a "favorites" list in their Internet browser that has links to lists of physicians' names by state, names of hospitals, geographic locations that are not spelled by the dictator, particular brands of surgical equipment or healthcare products, or the correct spelling of recently approved drugs.

A caveat: Understand how to ascertain the legitimacy of your Internet source before using the information found on a particular web site. Many MTs use the Internet almost exclusively as a medical resource when researching information about which they are unsure. However, anyone can create a web site without having its contents verified as factual, and even a "reliable" medical site may contain information about a particular item or field of study that turns out to be false or in conflict with another. This is why many medical transcription service providers prohibit the use of the Internet as a transcriptionist's sole source of reference, even banning certain sites outright. Always verify your findings with a second reference (such as a medical word book or dictionary). For example, entering a search for the word "permacath," the way many dictators pronounce this term in dictation, will produce thousands of hits, even those considered to be reliable medical sites, with the spelling "permacath," when the correct spelling is PermCath.

SPECIAL WORD-PROCESSING FEATURES

MS Word offers some handy built-in tools to help make medical transcription easier.

Document Templates

The purpose of a template is to create readable, uniform documents. A **template** is a document with preset formatting and settings that acts as a basic structure for a document such as a fax, invoice, or business letter. It contains standard text that is common to all documents of a particular type as well as predefined document settings, such as margins and fonts. The template

keeps these preferences "memorized," and each document of a particular type looks the same. It becomes a custom document after you fill in the blanks with your data and save the resulting document with a new name. You can edit the "new" document and make changes, but the template file remains intact.

Every word-processing program, including MS Word, contains document templates. Most programs feature a variety of built-in preset templates that can be used immediately or altered to meet the needs of the user. For example, blank MS Word documents are based on the *Normal* template, which uses the following preset options:

- font type and size (usually *Times New Roman* at *12 points*).
- language (usually *US English*).
- alignment (usually *flush left*).
- line spacing (usually *single*).
- **widow/orphan control**, a feature that prevents a paragraph from being broken in such a way that a single line appears at the top or bottom of a page (usually set to *on*).

New templates can also be created to function as a custom design for frequently used documents. Most healthcare providers use templates for reports so that they are all uniform in features such as appearance of headings, font size, and page settings.

Macros

A **macro** is a series of commands that is recorded in a single command so it can be played back, or executed, later. Macros are useful for automating complex or repetitive tasks or actions. Macros are recorded as a sequence of actions and then played back later, similar to a tape recorder.

Some typical uses for macros include:

- Speeding up editing and formatting of routine documents.
- Combining multiple commands; for example, performing a spell check on a document, then saving and printing the document, and then closing the document window.
- Automating complex tasks, such as opening a document template and positioning the cursor at each insertion point to add text automatically, and then saving the document.

Once a macro is created, you can activate it by using the *Macro* dialog box from the Word pull-down menu. You can also assign a keyboard shortcut to the macro and activate it by pressing the appropriate keyboard combination.

AutoCorrect

AutoCorrect is a feature of MS Word that automatically corrects common spelling mistakes as they are typed. The AutoCorrect feature can save you time during editing. Some features of AutoCorrect include:

- Capitalizing the next word after a period and a space.
- Correcting two initial capital letters.
- Capitalizing names of days of the week.
- Correcting common typing errors, for example, "recieve" to "receive."
- Capitalizing first letters of words in table cells.
- Creating "smart quotes" (which turn toward the text) for regular quotation marks in text.

Because this feature was intended to correct errors as they occur, it is always active, meaning that whenever an "error" is typed, it will be corrected without the user having to think about it. However, Word does allow you to record exceptions or to turn off certain features of AutoCorrect, so you can take advantage of the feature without worrying about words or phrases particular to your work that may conflict with the rules of AutoCorrect. If you use a hospital name that has two initial capital letters, you would not want that text to be corrected.

AutoText

The AutoText feature is useful for saving keystrokes while typing in your document. An AutoText entry is composed of an abbreviation and an associated phrase. Similar to a text-expander program, AutoText stores and quickly inserts text, graphics, fields, tables, or other items used frequently in a document. This is useful for inserting standard or often-used text in a document so that you do not need to type it repeatedly. AutoText retains the formatting of the entry (such as font, size, or justification) used when you created the entry or matches the entry to the current document's formatting. Once an entry is created, it can be used throughout the current document and other documents associated with the same template. To make entering text easier, Word offers the AutoText toolbar. In addition to the entries you create, Word's AutoText entries include some standard entries to be used as they are or reformatted to your specifications.

Although AutoText performs like a text expander, it should not be used as a substitute for standard text-expanding software for medical transcriptionists. An

TRANSCRIPTION TIP:

If possible, add only lowercase words with AutoCorrect. When you add a word with an initial capital letter, such as *Apin* for *pain*, AutoCorrect replaces only words with an initial capital letter. When you use AutoCorrect on a word that is all lowercase, AutoCorrect will fix the word every time.

QUICK CHECK 2.4

Indicate which special word processing feature would be used for the following tasks.

1. Saving keystrokes while typing in a document: _____.
2. Using one command to spell check a report, print, and save: _____.
3. Correcting typographical errors as they happen: _____.
4. Using preset formatting and document settings to act as a basic structure for all fax cover sheets: _____.
5. Automatically capitalizing days of the week: _____.

excessively large AutoText list can affect the performance of the computer as well as the response time, causing the computer to "freeze up" or to delete the entire library of entries. Text-expanding software programs specially designed for document production like medical transcription allow for an unlimited amount of entries to be added to their databases without any threats of glitches.

Headers and Footers

A **header** is text printed at the top of each page of a document. A **footer** is text printed at the bottom of every page of a document. In MS Word, headers print in the top margin one-half inch from the top of every page, and footers print in the bottom margin one-half inch from the bottom of each page. Headers and footers can include text and graphics as well as the page number, total number of pages, current date, and current time.

In medical documents, headers can appear on every page of a medical report, or may be used from the second page onward, to indicate reference items pertaining to a patient's statistical information, such as the patient's name, medical record number, name of the report, date, page number, and physician's name. Footers may also be used to indicate page numbers in a multiple-page report.

FILE MANAGEMENT

Knowing how to organize, locate, and save the documents you create and use will make you more productive in class and on the job. In class, you will create a document on a blank screen, print the document, and save it using a new file name either on a CD or another location as indicated by your instructor.

Have you ever had papers spread out all over your desk? Eventually there would be so many items scattered in so many different places that your work space would become an unusable mess. Eventually you would need a file cabinet to keep all your papers neat and organized so you could retrieve them quickly later. In a basic sense, a computer's hard disk is like a filing cabinet. And, like a filing cabinet with folders and papers in those folders, the information on the hard disk is organized into folders and files. A **folder** is a "container" in which you store documents, like a manila folder in a filing cabinet. Folders are the basic organizational building blocks of any computer system. Like in a filing cabinet, folders keep things orderly and tidy and make retrieval of documents easy. Without folders, it would be virtually impossible to keep track of all the data contained on even the smallest system. Folders store computer data, called **files**. A file is a block of information stored in a folder. It can be a document, or it can be a spreadsheet, a picture, a song, or a video. Even the software components of the computer itself are called files, and those files are maintained in folders on the computer. All the folders, and those folders nested within them (called subfolders), form a hierarchy on the computer called the **directory tree**. The directory tree is a virtual container on the computer system in which groups of folders and files can be kept and organized, as shown in Figure 2.4.

To open a folder, double-click its icon. When you open the folder, the contents of the folder are displayed. When you double-click a file, that item opens along with the program that is capable of displaying it. For example, when you open a Word document, MS Word will open so you can view the document.

If your classroom does not use a document-management program and your instructor does not specify a particular method for saving your work, you will need to create a file management system to save your work in an organized fashion. Save and store your document files on a blank CD to make storage and retrieval of your work fast and easy.

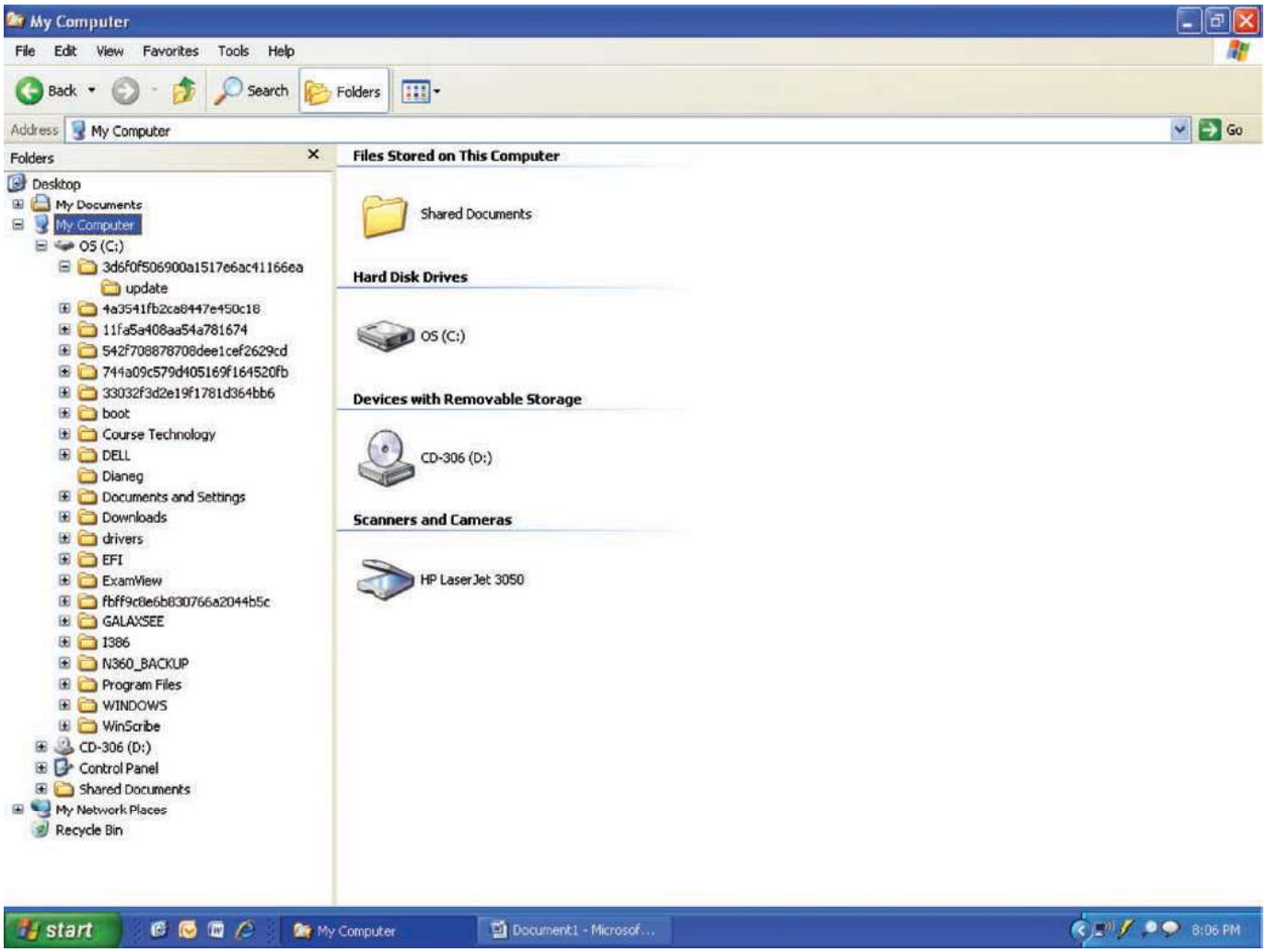

FIGURE 2.4. **Directory Tree.** A directory tree keeps folders and files organized on the computer.

Creating Folders and Organizing Files

One way to organize your files in this course is by chapter. When you begin a new chapter, you can create a central folder for all of the documents in that chapter by chapter number (for example, CHAPTER 10). Another way to organize files is to delineate them by document type and placing all work from the chapter into folders according to the type of document created (for example, LETTERS, CLINIC NOTES, DISCHARGE SUMMARIES, etc.).

Once you have devised a strategy for managing your files for this course, create folders and organize files within them as you progress thorough each chapter. To create a folder, do the following:

Access the CD drive of the computer, which is usually drive D: or E:. Select *File*, *New*, and then *Folder* from the drop-down menu on the top tool bar, or move your mouse pointer and click on the folder button positioned on the tool bar. (This command is the same for Word 2007.) A boxed icon and the highlighted words, *New Folder*, will appear on the screen. Key in the desired name of the folder (either a chapter number or a document type) and press *Enter*. You now have a new folder where you can store your completed documents. For each completed document you want to save, locate the folder where you want to store the file. Then save the document in the selected folder.

CHAPTER SUMMARY

The standard of medical transcription demands that a document be correctly formatted and free of spelling and grammar errors. The transcribed dictation becomes a legal document, as well as a medical record on which diagnosis and treatment of a patient is based; there is simply no room for error. Medical transcription is typically a quantity-driven business, but unless a document is accurate in content and neatly prepared, speed is worthless. A medical transcriptionist who is viable today must adapt to the ever-changing tools and technology of the trade to always remain relevant and to work smarter as well as faster.

·I·N·S·I·G·H·T·

The Cost of Medical Documentation Mistakes

Tens of thousands of deaths are caused each year by mistakes in medical documentation. Latent medical transcription errors—the careless transcription of misinformation into a patient's medical record because of sloppy listening or typing skills—is a major threat to the safety of patients.

An error in transcription may appear to be minor, but even something as benign as an error in typing a patient's height and weight could result in an anesthesiologist administering too little—or too much—medication. Transcription errors that compromise patient safety also include confusing two drugs with similar names, mistyping zeros and decimal points, or misunderstanding abbreviations dictated by physicians. Although the Joint Commission discourages the use of abbreviations, many physicians still dictate them; and a medical transcriptionist must be careful to distinguish between, for example, such abbreviations as "q.h.s.," which means "at bedtime," and "q.h.," every hour.

Transcription errors also may result in a patient being denied insurance coverage. If an entry such as an adverse condition is inserted inadvertently into a patient's medical record because a medical transcriptionist was not listening closely enough to the dictation, an insurance company may have no choice but to refuse to cover treatment for an individual. Erroneous information in patient records could even compromise research projects where the protocol demands that all information on patients be comparable.

Although continuing advances in computerizing medical information are eliminating most errors caused by inaudible or sloppy dictation, it is the obligation of both healthcare information managers and medical transcriptionists to ensure that inaccuracies in medical records are kept to a minimum and do not become the underlying cause of errors that threaten the health of patients.

ABBREVIATIONS

Abbreviation	*Meaning*	*Abbreviation*	*Meaning*
CD	compact disk	LAN	local area network
CD-R	compact disk—recordable	LCD	liquid crystal display
CD-ROM	compact disk—read-only memory	SRT	speech-recognition technology
CD-RW	compact disk—rewritable	URL	Uniform Resource Locator
CPU	central processing unit	USB	universal serial bus
CRT	cathode-ray tube	VPN	virtual private network
FDA	Food and Drug Administration	VR	voice recognition
FTP	file transfer protocol	WWW	World Wide Web
IT	information technology		

Add Your Own Abbreviations Here:

TERMINOLOGY

Term	*Meaning*
applications	Sets of instructions that enable the computer to perform a variety of tasks.
applications software	Also called "computer programs," sets of instructions that enable the computer to perform a specific work task.
back-end SRT	A process by which a physician dictates into a speech-recognition system and the recognized draft document is routed along with the dictated voice file to the transcriptionist, who verifies the accuracy of the draft and finalizes the report.
cathode-ray tube (CRT)	A computer monitor that displays images using an electron beam.
central processing unit (CPU)	A small but very advanced microprocessor chip that sits on the motherboard and processes data entered into the computer.
client/server architecture	A framework by which a remote file server computer system can provide files and services to the client user's local computer.
compact disk (CD)	A metallic disk coated with a special dye that allows data to be recorded onto it by a laser.
Compact Disk-Read Only Memory (CD-ROM) drive	A storage drive that reads data from CDs that can hold large amounts of information.
Compact Disk-Recordable (CD-R)	A type of CD that allows data to be read from it but to be recorded onto it only one time.
Compact Disk-Rewritable (CD-RW)	A type of CD that has the capability of both reading data and saving it to the disk multiple times.
data	A collective term that encompasses facts and information.
desktop	The view on the computer screen when Windows starts.
digital dictation	A method of recording information using the computer and Internet as opposed to tapes or other media.
directory tree	A virtual container on the computer system in which groups of folders and files can be kept and organized.
disk drives	Devices that store information in the computer.
earphones, syn. headset	A device that plugs into a transcriber or computer, allowing dictation to be heard.
e-mail	The way in which messages can be sent over the Internet.
encryption	A process whereby transmitted information is converted into a special coded computer language when transferring data over the Internet.
file	A block of information stored in a folder on the computer.
file server	The main hub computer that connects individual computers to a system.
file transfer protocol (FTP)	The method by which files are transferred from one computer to another over the Internet.
flash drive	A small, solid-state, portable drive that can hold a large amount of data.
folder	A place on the computer in which you store documents and other data, like a manila folder in a filing cabinet.
foot pedal	A device which allows the transcriptionist to keep both hands on the keyboard to type while controlling the flow of dictation played back.
footer	Text printed at the bottom of every page of a document.
front-end SRT	A process by which text is generated on-screen from dictation in real-time, allowing physicians to edit and correct the final document themselves.

Term	*Meaning*
function keys	Special keys found on the top of a computer keyboard that provide different functions depending on the software being used.
hard disk drive	A storage device that is fixed inside the computer and stores large volumes of data that can be accessed and retrieved quickly.
hardware	The term used to describe the equipment that makes up the computer system.
header	Text printed at the top of each page of a document.
icons	The name given to Windows graphic images.
information technology (IT)	A general term that refers to the processing, storage, and/or transfer of information.
keyboard	The device used for typing text into the computer.
liquid crystal display (LCD)	A computer monitor that displays images using a liquid crystal solution.
local area network (LAN)	A network system that is capable of serving a vast number of users at the same time.
macro	A series of commands that is recorded in a single command so it can be played back later.
monitor	The device that displays viewable images generated by the computer.
motherboard	A large circuit board with connections for other components of the computer.
mouse	A small device used to point to and select items on the computer screen.
navigation keys	Special keys on the computer keyboard used to reposition the cursor quickly.
numeric keypad	Special keys on the computer that allow for numbers to be entered quickly.
ports	Specific openings typically located on the back of the computer case.
shortcuts	The icons on the computer desktop that "point" to a real file on the hard drive.
software	One or more computer programs that provide instructions to the computer to perform a particular task.
speech-recognition technology (SRT), syn. voice recognition (VR)	A system that allows computers with a source of sound input, such as a microphone or hand-held dictation device, to interpret human speech, word for word, for transcription of medical documents.
spyware, syn. adware	Programs unknowingly installed on a computer that spy on a user's computer activity for advertising purposes.
stand-alone system	A computer that is not connected to any other computer in the office.
Start button and menu	The central launching point on the computer desktop for applications and tasks.
storage	The term used to describe the devices that are used to store and transfer data.
style book	A manual that provides information on medical transcription styles, forms, and grammar and usage specific to medical terms.
System tray	The small bar in the lower right corner of the computer desktop that contains miniature icons for easy access to system functions.
systems software	The computer program that coordinates all the data received by the computer and instructs the computer on how to process that data.
Task bar	The part of the computer desktop that displays software programs which are open and running simultaneously.
tower	The part of the computer that contains the circuitry needed for the computer to operate.
transcriber	A machine that makes it possible to listen to dictated recordings in order to transcribe them into written documents.

Term	*Meaning*
transcription platform	A type of digital dictation software that enables medical transcriptionists to retrieve, transcribe, and return reports directly from a central computer networking system.
tunnels	Encrypted connections between two locations, used to bypass insecure public networks found on the Internet.
Uniform Resource Locator	An address of a web site on the Internet.
universal serial bus (USB)	A standard connector that allows all types of devices to be plugged into the computer quickly and easily.
virtual private network (VPN)	A computer network that uses a public telecommunication infrastructure, such as the Internet, to provide remote offices or individual users with secure access to their organization's network.
widow/orphan control	A word-processing program feature that prevents a paragraph from being broken in such a way that a single line appears at the top or bottom of a page.
Windows	The operating system software used by most computers.
workstations	Individual computers connected to a local area network (LAN).
World Wide Web (WWW)	A term that refers to all the web pages and web sites on the Internet that contain some form of information.
zip drive	A kind of disk drive that uses special disks that can hold a lot of data.
zip files	The name given to files placed on a zip drive.

Add Your Own Terms and Definitions Here:

REVIEW QUESTIONS

1. What is the difference between a single computer workstation and a stand-alone system?
2. Explain the advantages and disadvantages of producing medical reports using speech-recognition technology.
3. What is the purpose of encryption?
4. What is a style book?
5. What does a file server do?
6. What is digital dictation?
7. Name three computer software program functions that can automate a medical office.
8. When or under what circumstances is Internet medical research better than using an on-site medical library?
9. What are Windows platforms?
10. How are word books different from medical dictionaries?

CHAPTER ACTIVITIES

Matching

Match the term in the left column with its definition in the right column.

A. tunnels	_____	A computer network that uses a public telecommunication infrastructure to provide remote offices or individual users with secure access to the company's computer network.
B. workstations	_____	Special coded computer language used to transmit information over the Internet.
C. VPN	_____	A machine that makes it possible to listen to dictated recordings.
D. CPU	_____	The main computer that stores centrally shared data and programs.
E. digital dictation	_____	Individual computers that are connected to a network.
F. LAN	_____	Speech-recognition technology.
G. SRT	_____	A document with preset formatting and settings.
H. encryption	_____	The recording and storing of dictation in a digital format on a chip, disk or computer's hard drive instead of a tape or similar media.
I. file server	_____	A computer that is not connected to any other computer in the office.
J. template	_____	The part of the computer that contains processing cards and circuitry.
K. transcriber	_____	Local area network.
L. stand-alone system	_____	Secure, encrypted connections between two locations on a network.

Research Activity

Using a pharmaceutical word book, locate the following brand-name drugs and indicate the generic name of the drug. Some drugs are a combination of one or more drugs. In that instance, list all of the combining drugs. If a pharmaceutical word book is not available, research this information using the Internet under the brand name.

1. Lorcet _____
2. Sustiva _____
3. Vytorin _____
4. Xanax _____
5. Plavix _____
6. Dilantin _____
7. Ceclor _____
8. Coumadin _____
9. Septra _____
10. Folgard _____

Fill-in-the-Blanks

Complete the following sentences with the missing word.

1. All components of a computer connect to the _____.
2. E-mails and other transmissions over the Internet use _____ that bypass insecure public networks.
3. _____ is an operating system software manufactured by Microsoft.
4. An individual computer connected to a network is called a _____.
5. A _____ is a required to control the flow of dictation while keeping both hands on the keyboard.
6. You would use a _____ to store a series of commands to play back later.
7. _____ a small, stick-shaped memory drive.
8. Windows uses _____, or graphic images, to click with a mouse.
9. Another name for speech recognition technology is _____.
10. MS Word is a kind of _____ used for word processing.

3

THE BASICS OF MEDICAL TERMINOLOGY

OBJECTIVES

After completing this chapter, you will be able to:

- Identify the basic component parts of medical terms.
- Identify common homonyms and soundalike words that are heard frequently in the dictation of medical reports, recognize and correctly pronounce words with unusual pronunciations, and explain how these word-confusion problems can lead to inaccuracies in medical transcription.
- Explain the difference between "slang" and "jargon" and be able to identify each.
- Use proper anatomic terms to describe the anatomic position, body planes, cavities, regions, and quadrants.

INTRODUCTION

Different professions use different "languages." The work of a medical transcriptionist involves the preparation of clear, accurate records using a language not found in everyday speech. This chapter illustrates the fundamentals of medical word-building skills, using prefixes, combined word forms, and suffixes to determine the proper spelling and meaning of medical words, and provides tips on working with the unique slang and jargon terms encountered in medical dictation. This chapter also discusses terms used to describe body direction and position when documenting where one part of the body is in relation to another. Although a thorough understanding of medical terminology is an essential component of an aspiring medical transcriptionist's education, please note that this chapter provides only an overview of these topics; it is not intended to take the place of a more comprehensive medical terminology course.

MEDICAL WORD BUILDING

The words that are used by the medical profession to describe the human body in health and illness are collectively referred to as **medical terminology**. Like every other language, medical terminology has changed considerably over time, but the majority of the terms are derived from Latin or Greek.

At first glance, medical language seems confusing and almost impossible to understand, but it makes sense once a word is analyzed and broken down into its component parts. Most people use medical terminology without even thinking about it: Words like *diarrhea*, *cardiac*, and *bronchitis* have become part of our everyday

QUICK CHECK 3.1

Identify the root word(s) in the following medical terms.

Term	*Root Word(s)*
hypercalcemia	_____
cardiology	_____
otolaryngology	_____
lithotomy	_____
esophagogastroduodenoscopy	_____

language and do not seem foreign because we understand their meanings.

English-language medical terms are commonly derived from Latin and Greek. As with all words, most medical terms are made up of one or more word parts. There are four basic parts, and any given medical term may contain one, some, or all of these parts:

- Prefixes
- Root words
- Suffixes
- Combining vowels that link root words and suffixes to form new words, called **combining forms**.

Prefixes

A **prefix** is a syllable or group of letters at the beginning of a word that modifies the root and changes its meaning. The prefix is not a full word itself, but rather comes before the root word. See the prefix in the following words:

Word	*Prefix*
readdress	re
unmask	un
precursor	pre

Table 3.1 illustrates some common medical prefixes and their meanings.

Root Words

The **root word** is the foundation of a word. See the root word in the following words:

Word	*Root Word*
reading, reader, reads	read
shopper, shopping, shopped	shop
marking, marker, marks	mark

The root word establishes the basic meaning of a word. Every word has at least one root word, but some medical words have two, three, or even four roots. Some root words are words that can stand alone other root words are simply the basic form of words, such as the word *duct*.

Any word containing more than one root word is known as a **compound word**. The English language has many compound words that are used every day, such as *storefront*, *sidewalk*, and *longstanding*. In theory, both root words that are contained in a compound word can stand alone as words. Many medical words are the same. For example, the word *lymphadenopathy* contains two words, *lymph* and *adenopathy*.

Suffixes

A **suffix** is a group of letters added to the end of a word that changes its meaning. You can see the suffix in the following words:

Word	*Suffix*
examining	ing
marker	er
testing	ing

TRANSCRIPTION TIP:

Know the difference between *inter* and *intra*, prefixes that sound alike when dictated. A good way to remember the difference is to think of inter as something occurring between two items, whereas *intra* is something occurring within one item. For example, *interstate* highways cross between two (or more) states. If the dictator is using one of these prefixes when talking about one item (like a spleen), the word would be *intrasplenic*, referring to elements within the one spleen, not *intersplenic*, or two spleens. It might be helpful, also, to coin the phrase, "intra- is the opposite of extra-," in trying to remember the difference between the two.

TABLE 3.1 Common Medical Prefixes

Prefix	*Refers To*	*Prefix*	*Refers To*
ab-	away from, outside of, beyond	intra-	inside
ad-	toward, near to	macro-	big
ante-, pre-	before	meso-	middle
an-, anti-	against, opposed, without	meta-	beyond
bi-	two	micro-	small
brady-	abnormally slow rate	mono, uni-	one
con-, sym-, syn-	with	neo-	new
contra-	against	oligo-	a few
dia-	across, through	pan-	everywhere
dys-	bad, difficult	peri-	around
ed-, ecto-	outside	poly-	many, much
en-, endo-	inside	post-	after
ex-, exo-	outside	pre-	before, in front of
extra-	beyond	quadri-	four
hemi-, semi-	half	retro-	backward, behind
hyper-	above, beyond normal	sub-	below; less than; underneath
hypo-	below, below normal	tachy-	abnormally high rate
infra-	outside or below	tri-	three
inter-	between		

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Table 3.2 lists some common medical suffixes and their meanings.

Combining Forms

What are combining forms? You can think of them as the LEGOs of language. As the name indicates, a **combining form** is a linguistic atom that occurs only in combination with some other word form. In medicine, a combining form contains a root word and a combining vowel. The root word contains the medical meaning of the word, and a **combining vowel** is a vowel that aids in the pronunciation of a word, used to combine a root and suffix or two root words. A combining vowel is usually an *o*, but it can also be an *i*, or an *a*. A combining vowel is used to join two medical words and make the resulting word easier to pronounce. The vowel is the link to other word parts and is essential to medical word building.

Together a combining form and a combining vowel form the foundation of a medical word. The root word is separated from the combining vowel by a forward slash. The combining vowel is at the end of the combining form. See Table 3.3 for a list of common combining forms used to make medical words.

Putting Word Parts Together

The following is an example of a medical word form using a root word, a combining vowel, and a suffix:

Word: *leukocyte*
Root word: leuk
Combining form: leuk/o
Suffix: -cyte

The combining vowel bridges the two parts of the word. In the preceding example, the combining vowel, *o*, is needed to create the word *leukocyte*. It would otherwise be difficult to pronounce the word *leukocyte* without a vowel to separate the root word and the suffix.

There are many variations in creating medical words using combining vowels. For example, if a suffix begins with a vowel, the combining vowel would not be used:

Word: *bronchitis*

There is no vowel necessary to combine the root word, *bronch*, with the suffix, *itis*, because the suffix, *itis*, begins with a vowel. Therefore:

Word: *bronchitis*
Root word: bronch
Combining form: (none)
Suffix: -itis

TABLE 3.2 Common Medical Suffixes

Suffix	*Meaning*	*Suffix*	*Meaning*
-ac, -al, -aneous, -ar, -eous, -iatric, -ic, -oid, -otic, -ous, -ular	converts a root or a noun term to an adjective	-meter	device for measuring
		-metry	act of measuring
		-oma	tumor
-cele	protrusion, hernia	-opsy	visual examination
-entesis	surgical puncture	-osis	condition
-cyte	cell	-pathy	disease
-desis	surgical binding	-penia	reduction of the size or quantity
-dynia	pain	-pexy	surgical fixation
-ectasis, ectasia	expansion or dilation	-phobia	a word meaning fear, often appearing as a suffix
-ectomy	surgical removal		
-edema	excessive fluid in intracellular tissues	-plasia	abnormal formation
		-plasty	surgical repair
-emesis	vomiting	-plegia	paralysis
-emia	blood	-poiesis	producing
-gen, -genic, -genesis	origin, producing	-ptosis	downward displacement
-globin	the protein of hemoglobin	-rrhage	flowing forth
-gram	written or pictorial record	-rrhaphy	suture
-graph	device for graphic or pictorial recording	-rrhea	discharge
		-rrhexis	rupture
-graphy	act of graphic or pictorial recording	-sclerosis	a word meaning "hard" that sometimes combines with other roots as a suffix to indicate a condition of hardness
-ian, -iatrics, -iatrist, -iatry, -ics, -ist, -logist, -logy	specialty of, study of, practice of		
-iasis	a suffix used to convert a verb to a noun indicating a condition	-scope	device for viewing
		-scopy	act of viewing
-ism	a noun-forming suffix indicating a practice or a doctrine	-sis	condition
		-spasm	muscular contraction
-itis	inflammation	-stasis	level, unchanging
-lith	a stone, calculus, or calcification	-stenosis	narrowed, blocked
-lysis	disintegration	-stomy	permanent opening
-malacia	softening	-tome	instrument for cutting
-mania	a morbid impulse toward a specific object or thought	-tomy	incision
		-tripsy	crushing
-megaly	enlargement		

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If a suffix does not begin with a vowel, a combining vowel must be added:

Word: *arthroscopy*

The suffix, *-scopy*, does not begin with a vowel. The resulting word without a combining vowel would be *arthscopy*, which is not a word. The combining vowel, *o*, separates the root word, *arthr* (meaning *joint*), from the suffix, *-scopy*. Therefore:

Word: *arthroscopy*
Root word: arth
Combining form: arthr/o
Suffix: -scopy

If the root word ends in a vowel and the suffix begins with the same vowel, the final vowel is dropped and no combining vowel is used:

Word: *carditis*
Root word: cardi
Combining form: cardi/o
Suffix: -itis
Cardi/o + *itis* is spelled *carditis*, not *cardioitis.*

TABLE 3.3 Common Combining Forms

Root Word and Combining Vowel	*Meaning*	*Root Word and Combining Vowel*	*Meaning*
angi/o	vessel	laryng/o	larynx
appendic/o	appendix	leuk/o	white
arteri/o	artery	lith/o	stone; calculus
arthr/o	joint	my/o	muscle
bronch/o	bronchus	nephr/or	kidney
calc/o	calcium	ocul/o	eye
carcin/o	cancer	oste/o	bone
cardi/o	heart	pachy/o	thick
chol/o, chol/e	bile	path/o	disease
cyan/o	blue	pneum/o	lung; air
derm/o, dermat/o	skin	pseud/o	false
duoden/o	duodenum	psych/o	mind
enter/o	intestines	rhin/o, nas/o	nose
erythr/o	red	splen/o	spleen
esophag/o	esophagus	steth/o	chest
gastr/o	stomach	stomat/o	mouth
hem/o, hemat/o	blood	therm/o	heat
hepat/o	liver	trache/o	trachea (windpipe)
hyster/o	uterus	ur/o, urin/o	urine
iatr/o	medicine; physician	uter/o	uterus
lapar/o	abdomen		

Adapted from Medical Terminology: A Programmed Learning Approach to the Language of Health Care *by Marjorie Canfield Willis, Lippincott, Williams & Wilkins, 2003.*

When combining two roots and the second root begins with a vowel, the combining vowel is retained:

Word: *gastroenteritis*

The combining vowel is necessary to join the first root word, *gastr*, with the second root, *enter*. Therefore:

Word: *gastroenteritis*
Root words: gastr and enter
Combining form: gastr/o
Suffix: -itis

Of course, there are exceptions to every rule. Some common terms that are not combined, even though they may sound that way when dictated, include the following:

Dorsal lithotomy, not dorsolithotomy.
Jugular venous distention, not jugulovenous distention.
Brachial plexus, not brachioplexus.
Atrial septal defect, not atrioseptal defect.

Plural Endings

Most medical words have English plural endings. However, many words, mainly derived from Greek and Latin, have plural endings that do not always follow the common English-language rule of adding an *s* to the end of a word, as shown in Table 3.4. Sometimes physicians dictate plural forms that do not sound the way they are spelled. Here are a few general rules for making medical terms plural:

- When a word ends in *um*, change the *um* to *a*. Example: bacterium becomes bacteria.
- When a word ends in *ex*, change the *ex* to *ices*. Example: index becomes indices.
- When a word ends in *on*, change the *on* to *a*. Example: criterion becomes criteria.
- When a word ends in *en*, change the *en* to *ina*. Example: foramen becomes foramina.
- When a word ends in *ma*, change the *ma* to *mata*. Example: angioma becomes angiomata.
- When a word ends in *a*, change the *a* to *ae*. Example: sclera becomes sclerae.

There are other ways to make medical words plural. You will need to remember these variations, and check plural forms of words that are dictated but unfamiliar to you.

TABLE 3.4 Plural Endings Found in Medical Words

Singular	*Plural*	*Singular Word*	*Plural Word*
-a	-ae	conjunctiva	conjunctivae
-ex	-ices	index	indices
-en	-ina	foramen	foramina
-is	-es	thrombosis	thromboses
-ix	-ices	appendix	appendices
-on	-a	ganglion	ganglia
-ma	-mata	stigma	stigmata
-nx	-ges	phalanx	phalanges
-um	-a	bacterium	bacteria
-us	-i	bronchus	bronchi

Analyzing Terms

A medical word is broken down by analyzing the prefix, root word (or combining form), and suffix of the word to determine its meaning. For example, the term *peri-carditis* can be divided into three parts: *peri-card-itis*. Once divided into its essential parts, pericarditis can be translated into ordinary English as follows:

The prefix *peri-* translates as surrounding (as in *perimeter*).
The combining form *card/i* translates to heart (as in *cardiology*).
The suffix *-itis* translates to inflammation.

TRANSCRIPTION TIP:

When transcribing ophthalmologic reports, physicians often dictate the words *sclera* and *conjunctiva*, the singular forms of the words, when referring to both eyes. Identify if the dictator is talking about one eye or both eyes and use the proper forms of these terms—*sclerae* and *conjunctivae* if plural.

QUICK CHECK 3.2

Circle the letter corresponding to the best answer for the following questions.

1. Which prefix means under, beneath, or deficient?
   A. hyper-
   B. extra-
   C. hypo-
   D. endo-

2. Which prefix means middle?
   A. dia-
   B. meta-
   C. bi-
   D. meso-

3. Which prefix means inside?
   A. semi-
   B. micro-
   C. tri-
   D. intra-

4. Which prefix means new?
   A. neo-
   B. contra-
   C. meta-
   D. mega-

5. Which prefix means half?
   A. post-
   B. ab-
   C. hemi-
   D. pan-

QUICK CHECK 3.3

Match the following suffixes with their meanings.

____ 1. -dynia	A. rupture
____ 2. -rrhea	B. surgical crushing
____ 3. -rrhexis	C. pain
____ 4. -tripsy	D. surgical removal
____ 5. -ectomy	E. discharge

A helpful way to analyze a medical term is to first go to the end of the word and locate the suffix. In the previous example, *-itis* is the suffix. Then go back to the beginning of the word and proceed in order of prefix and root(s) or combining forms. In the previous example, by locating the prefix, *peri-*, meaning surrounding, and the combining form, *card/i*, meaning the heart, you may conclude that the term pericarditis means *inflammation of the heart*, or more specifically, an inflammation of the outer layer of the heart.

By adding a new prefix or suffix to a root word, new terms are created. For example, if the combining form *my/o*, which means muscle, is added to the combining form *card/i* above, referring to the heart, a new word is created with *myocarditis*, meaning *inflammation of the muscles of the heart*.

WORD-CONFUSION PROBLEMS

One challenge faced by medical transcriptionists is the confusion of two words or terms that may sound similar when dictated. It is important to avoid a mistranscription when these terms are encountered in dictation. The most common word-confusion problems involve homonyms, soundalike words, and words with unusual punctuation.

Homonyms

A recurrent problem in medical transcription is the use of a word that is incorrect in the context of the report, even when it sounds like the one that belongs there. Words that sound *identical* but have different spellings and meanings, called **homonyms**, are a particular challenge. Many medical words sound identical to other words when dictated but, in reality, are completely unrelated, as shown in Table 3.5. For example, a common transcription error is typing the word *elicit*, which means to call forth (as in, to elicit a response) for the word *illicit*, or contrary to law (as in, illicit drug use). These two terms sound identical when dictated but have completely different meanings. You should listen carefully to understand the context of the sentence to select the correct word.

Soundalike Words

Soundalike words are words that sound alike but have different spellings and meanings. Unlike homonyms, which sound identical, soundalikes have distinctly different pronunciations when listened to carefully, as shown in Table 3.6. For example, *Zantac*, the gastrointestinal drug, is not the same as *Xanax*, the anxiolytic; yet both words sound similar if not dictated clearly. It would be a crucial mistake to type the wrong medication into a medical report. Therefore, it is important to listen and understand the context of the dictation to discern between soundalike words. In the previous example, if the physician was dictating a clinic note about a patient with a stomach problem, the word in question would probably be *Zantac*, not *Xanax*.

See more homonyms and soundalike words pertaining to body systems in the chapters of this book.

Unusual Word Pronunciations

The English alphabet is composed of 26 letters, but these 26 letters make up 44 sounds. Some letters can have several sounds. In addition, letters combined with other letters can produce completely different sounds. For example the letter *n* makes a sound as in the word *no*, but the letters *p* and *n* together also make the identical sound, such as in *pneumonia*. These 44 sounds of English are called **phonemes**. A phoneme is a sound that can be represented by different combinations of letters. In medical terminology, silent letters and unusual punctuation that are a part of phonemes

TABLE 3.5 Common Homonyms

Word	*Common Pronunciation*	*Homonym*
accept: receive willingly, something given or offered.	ek-′sept	**except:** to prevent from being included or considered or accepted.
aide: someone who acts as an assistant.	′ād	**aid:** to provide help or assistance.
bare: lacking a natural, usual or appropriate covering.	bār′	**bear:** to support a weight or strain.
canker: a common term for a small ulcer on a mucous membrane.	kang′ker	**chancre:** a primary lesion of syphilis.
coarse: having large-grained or rough texture.	′koors	**course:** a mode of action.
complement: something added to complete or make perfect.	kom′plĕ-ment	**compliment:** a remark (or act) expressing praise and admiration.
discrete: separate; distinct.	dis-krēt′	**discreet:** having or showing good judgment in conduct.
elicit: to call forth (as in a response).	i-′li-sit	**illicit:** contrary to law.
fourth: the number after third.	′fōrth	**forth:** forward in time or order or degree.
mucus: viscid secretion produced by mucous membranes (a noun).	mūkŭs	**mucous:** pertaining to mucus; also, secreting mucus, as "mucous membranes" (an adjective).
plain: unadorned, as in x-ray.	plān	**plane:** a two-dimensional flat surface.
radical: designed to remove the root of a disease or all diseased tissue.	rad′i-kăl	**radicle:** a rootlet or structure resembling one, as a vein, a minute veinlet joining with others to form a vein, a nerve fiber that joins others to form a nerve.
sight: the range of vision.	sīt	**site:** physical position in relation to the surroundings. **cite:** to refer to for illustration or proof.
viscus: a main organ that is situated inside the body.	vis′kŭs	**viscous:** having a relatively high resistance to flow (like glue).

can make it difficult to ascertain the correct spelling of a word, as shown in Table 3.7. When you encounter a term in dictation that may be difficult to identify, try searching your resource materials for the word using different phonemes; this may make identification easier.

TRANSCRIPTION TIP:

Be aware of adjectives that cross over from general English usage into medicine—their meanings do not always remain the same. For example, a person described as *indolent* in general conversation may be lazy or dislike exertion, but in medical terminology, the same term means causing little pain (as in indolent sinusitis) or growing slowly (as in an indolent tumor).

SLANG AND MEDICAL JARGON

By definition, **slang** is a type of language deliberately used in place of standard terms by a particular group. The language of medicine is full of slang, and all physicians use it when dictating. You must be able to recognize slang terms and be able to decide which expressions to transcribe verbatim, which ones to transcribe in formal terms, and which ones to not transcribe at all or to mark for review.

Most medical slang is derived from longer words that have been shortened in order to be dictated quickly. Some words have lost their beginnings, such as *crit* for hematocrit, or *scope* for bronchoscope; other words have

TABLE 3.6 Common Soundalike Words

Word	*Word Pronunciation*	*Soundalike*	*Soundalike Pronunciation*
access: admittance; "access to."	ak′ses	**axis:** a real or imaginary straight line going through a structure around which it revolves, or would turn if it could revolve.	ak′sis
affect: to influence.	af′fekt	**effect:** result or a cause.	ef′fekt
afferent: inflowing; conducting toward a center.	af′ĕ-rĕnt	**efferent:** conducting (fluid or a nerve impulse) outward from a given organ or part thereof.	efĕr-ent
apposition: the setting of one thing beside the other, as in suturing wounds.	ap-ō-zish′ŭn	**opposition:** the act of being opposite.	op-ō-zish′ŭn
bolus: a single, large quantity of a substance, such as a bolus dose of a drug injected intravenously.	bō′lŭs	**bullous:** relating to a fluid-filled blister.	bul′ŭs
canalization: the formation of canals or channels in a tissue.	kan-ăl-ī-zā′shŭn	**cannulization:** insertion of a cannula, or tube.	kan-ŭ-lī-zā′shŭn
enervation: failure of nerve force.	en-ĕr-vā′shŭn	**innervation:** the supply of nerve fibers functionally connected with a part.	in-ĕr-vā′shŭn
facial (with a long *a* sound): referring to the face.	fā′shăl	**fascial** (with a short *a* sound): relating to any fascia, which is the fibrous tissue that envelops the body beneath the skin.	fash′ē-ăl
gauge: a standard measure, as in surgical wire.	gāj	**gouge:** a hollow chisel used for cutting or removing.	gowj
homogeneous: of uniform structure or composition throughout.	hō-mō-jē′nē-ŭs	**homogenous:** having a structural similarity because of descent from a common ancestor.	hō-moj′ĕ-nŭs
perfusion: the pumping of a liquid into an organ or tissue.	pĕr-fyū′zhŭn	**profusion:** the property of being extremely abundant.	prō-fyū′zhŭn
phoresis: a biologic association in which one organism is transported by another.	fōr′ē-sis	**pheresis:** a procedure in which blood is removed from a donor, separated, and a portion retained, with the remainder returned to the donor.	fe-rē′sis
perfuse: to flow or spread, such as blood.	pĕr-fyŭs′	**profuse:** lavish, extravagant, bountiful.	prō-fyüs′
regime: government or social system, often mispronounced in medicine for the word *regimen*.	rā-zhēm′	**regimen:** a systematic course of diet, therapy, or exercise.	rej′i-mĕn
tract: a system of organs, such as the gastrointestinal tract. Also, an abnormal passage through tissue, such as a sinus tract or fistulous tract. Most *tracts* are located *inside* the body.	trakt	**track:** a pathway. Most *tracks* are located *outside* of the body.	trak

TABLE 3.7 Phonemes

Letter(s)	*Sounds Like*	*Example*	*Definition*
ch	k	cheilitis	an inflammation of the lips
eu	u	euosmia	relating to a pleasant odor
gn	n	gnashing	the grinding together of teeth
j	y	johnin	a sterile solution used as an allergen to for testing cattle for Johne's disease
mn	n	mnemonics	a system for improving memory
ph	f	phalanx	one of the long bones of the digits of the hand or foot
pn	n	pneumonia	an inflammation of the lungs
ps	s	pseudo-	prefix for *false*
pt	t	ptosis	a sinking down or prolapse of an organ
rh	r	rheumatism	a disorder of muscles and joints
x	z	xanthoma	a yellow nodule on the skin

lost their endings, such as *consult* for consultation or *chemo* for chemotherapy; still other words have lost both their beginnings and endings, such as *flu* for influenza and *scrip* for prescription.

Some slang comes from letter abbreviations for words, where the initials of words are used instead of the full phrase. For example, *H&H* stands for *hemoglobin and hematocrit*, and *DC* can mean *discharge* or *discontinue*.

Jargon is a term used to describe the special language of a profession or an area of expertise, such as medicine or law. Often called "shop talk," this language is used by practitioners of certain trades, such as doctors, to discuss their activities or their equipment and its uses.

The use of slang and jargon is part of the "gear and tackle" of various trades. It is a tool that helps experts communicate with other experts in the same field. Many times slang and jargon become so integrated into our day-to-day language that they are often hard to recognize. However, *The Book of Style for Medical Transcription, 3rd ed.*, clearly states, "Edit inappropriate slang words and phrases, keeping in mind that many words start out as coined or slang terms but later evolve through usage to eventually become acceptable words in the American medical lexicon." Table 3.8 illustrates some common slang and jargon terms and the correct way to transcribe them.

TRANSCRIPTION TIP:

Physicians often create an acronym out of an abbreviation. For example, the postanesthesia care unit (PACU) is a new designation for the recovery room after surgery. Surgeons will dictate this area as the "PAK-yoo." The surgical intensive care unit (SICU) is often pronounced as "SICK-yoo."

MEDICAL ABBREVIATIONS

In patient care there is a lot of repetition of the same diseases, syndromes, body parts, symptoms, and diagnostic tests. In addition, doctors commonly use a variety of abbreviations to rapidly and succinctly record information about their patients. As a result, many of these terms and phrases have come to be known by their respective abbreviations. Unfortunately, abbreviations often sound confusing when dictated fast or mumbled into dictation equipment. For example, an *s* may sound deceptively like an *f*, or a *v* like a *d*. Therefore, you should be familiar with common abbreviations in order to be accurate and more productive.

Generally, abbreviations may be used in the body of a report if dictated by a physician, unless the healthcare facility for which you work specifies otherwise. Laboratory values often include abbreviations that should be transcribed as such, as should abbreviations that are rarely used in unabbreviated forms, such as *CT scan*, *Pap smear*, or *PPD test*.

Some preferred formats for commonly used abbreviations include the following:

Blood gas values: pH, PO_2, PaO_2, PCO_2, $PaCO_2$
EKG leads (including augmented limb and precordial leads):
lead I, lead II, lead III
aVR, aVL, aVF
V1, V2, V3, V4, V5, V6, V7, V8, V9
or V_1, V_2, V_3, V_4, V_5, V_6, V_7, V_8, V_9
or sometimes dictated as sequential leads: V1 through V9 (V_1 through V_9)

TABLE 3.8 Common Slang and Jargon

Slang/Jargon Word	*Proper Transcription*	*Slang/Jargon Word*	*Proper Transcription*
accels	accelerations	hep	hepatitis (A, B, or C)
afib	atrial fibrillation	kilos	kilograms
alk phos	alkaline phosphatase	lap chole	laparoscopic cholecystectomy
amp	ampicillin (also refers to ampule or ampere)	lap pads	laparotomy pads
		lymphos	lymphocytes
appy	appendectomy	lytes	electrolytes
basos	basophils	mag ox	magnesium oxide (note there is a brand name drug called Mag-Ox)
bicarb	bicarbonate		
bili	bilirubin	meds	medications
C diff	*C difficile* or *Clostridium difficile*	mets	metastasis or metastases
CA	cancer or carcinoma	mig per kig	milligrams per kilogram or mg/kg
cap	capsule	mikes	micrograms
cap refill	capillary refill	monos	monocytes
cath	catheter or catheterization	nebs	nebulizers
cathed	catheterized	neuro	neurologic or neurology
chemo	chemotherapy	preop	preoperative
clinda	clindamycin	pro time	prothrombin time or ProTime
crit	hematocrit	regurg	regurgitation
cysto	cystoscopy	sat	saturation
D-C	discontinued or discharged	sed rate	sedimentation rate
decels	decelerations	segs	segmented neutrophils
derm	dermatology, dermatologic	staph	staphylococcus
diff	differential	strep	streptococcus
echo	echocardoigram (also refers to echoencephalogram; unless you are sure of the expanded term, you should transcribe as is)	T-bili	total bilirubin
		tachy	tachycardia or tachycardic
		toco	tocolysis
		tox	toxicology
eos	eosinophils	trach	tracheotomy or tracheostomy
epi	epinephrine	triple a	abdominal aortic aneurysm
fem-pop	femoral-popliteal	utox	urine toxicology
flex sig	flexible sigmoidoscopy	vanc	vancomycin
gent	gentamicin	v-tach	ventricular tachycardia

TRANSCRIPTION TIP:

Occasionally you may hear some slang or jargon that can be profane or defamatory. Flip, offensive language is out of place in a medical report. Flag such items as *hoagie* (a premature infant who is swaddled in an aluminum-type wrap to prevent hypothermia), *FLK* (a funny-looking kid) or *gomer* (a tiresome, difficult, or hypochondriacal patient) when they are dictated.

not V1 through 5 or V_1 through $_5$ (even if dictated)
not V1-5 or V_{1-5}
Immunoglobulins: IgA, IgD, IgE, IgG, and IgM
Blood pressure: mmHg

As a medical transcriptionist, you should transcribe abbreviations as they are heard. Some facilities do not allow certain abbreviations to be used in medical records, however. If that is the case, you should insert the full meaning of the abbreviation into the document. If an abbreviation has more than one meaning, it is up to you to determine the correct meaning. One way to do this is to look up the abbreviation in an abbreviation

word book or style guide to view all available meanings of the abbreviation and determine the correct one according to the surrounding text or topic discussed. If you are still not sure of which meaning to use, or if there a chance that a meaning could be misconstrued, you should type the abbreviation without expanding it, or flag the item for review by a supervisor.

The **Joint Commission** is an independent, not-for-profit organization, established more than 50 years ago. The Joint Commission is a board of individuals comprising physicians, nurses, and consumers, and sets the standards by which healthcare quality is measured in America and around the world. To earn and maintain accreditation, organizations must have an extensive on-site review by a team of Joint Commission healthcare professionals at least once every three years in order to evaluate the organization's performance in areas that affect patient care.

One of the indicators assessed by The Joint Commission is compliance with patient safety goals. To help reduce the numbers of medical errors related to incorrect use of terminology, The Joint Commission issued a list of abbreviations that should no longer be used in charting, orders, and other clinical documentation. In addition, the **Institute for Safe Medication Practices** (ISMP), a nonprofit organization that partners with healthcare practitioners to improve medical error prevention and safe medication use, has issued a list of frequently misinterpreted and harmful medication errors. See Appendix 1 for the ISMP's List of Error-Prone Abbreviations, Symbols, and Dose Designations, which also includes The Joint Commission's "do not use" abbreviations. Healthcare facilities have implemented these lists, which apply not only to medication orders but to all clinical documentation, including physician orders, progress notes, consultation reports, and operative reports. Refer to these lists when transcribing to avoid typing abbreviations that are not acceptable.

ANATOMIC TERMS

Because anatomy is a descriptive science, it is vital to know the meaning of certain terms that describe body parts and positions. Physicians and clinicians have developed a set of terms, each of which has a precise meaning to describe the anatomy of the body.

Anatomic Position

The **anatomic position** is an arbitrary position used as a reference when describing parts of the body in relation to each other. When used with other terms relating to direction or movement, the anatomic position allows a standard way of documenting where one part of the body is in relation to another, regardless of whether the body is standing up, lying down, or in any other position. For example, a patient's eyes are always superior to the mouth, whether the patient is lying down or standing on his or her head.

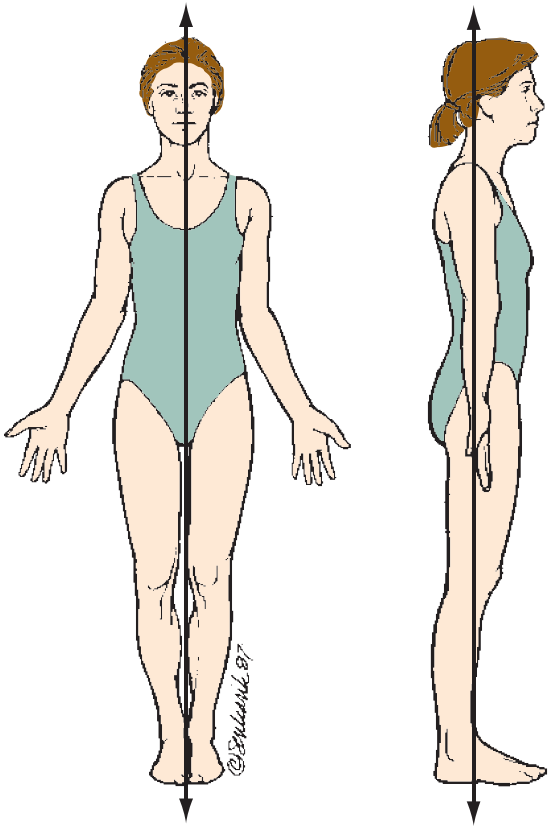

FIGURE 3.1. Anatomic Position. The anatomic position provides a standard way of documenting where one part of the body is in relation to another. Reprinted from Moore KL and Agur A. *Essential Clinical Anatomy,* 2nd Ed. Philadelphia: Lippincott Williams & Wilkins, 2002.

Figure 3.1 illustrates the anatomic position of the human body: standing erect with eyes looking forward, arms at the sides, palms facing forward, and soles of the feet flat on the ground. No matter what position a body is in, surfaces are referred to as if the individual is standing erect in the anatomic position. For example, when a physician dictates the directions left or right, it is always from the point of view of the patient. Visualize this upright position when listening to the dictator describing locations in the body.

Directional Terms

Directional terms are used to discuss body parts in relation to one another, as shown in Figure 3.2. The **midline** is an imaginary vertical line that divides the body into equal right and left sides. The following terms refer to direction of the body:

- Anterior (ventral): Toward the front of the body.
- Posterior (dorsal): Toward the back of the body or "behind."
- Anteroposterior (AP): Direction or view going through the patient from anterior to posterior. The *AP view* is used when transcribing x-ray reports.

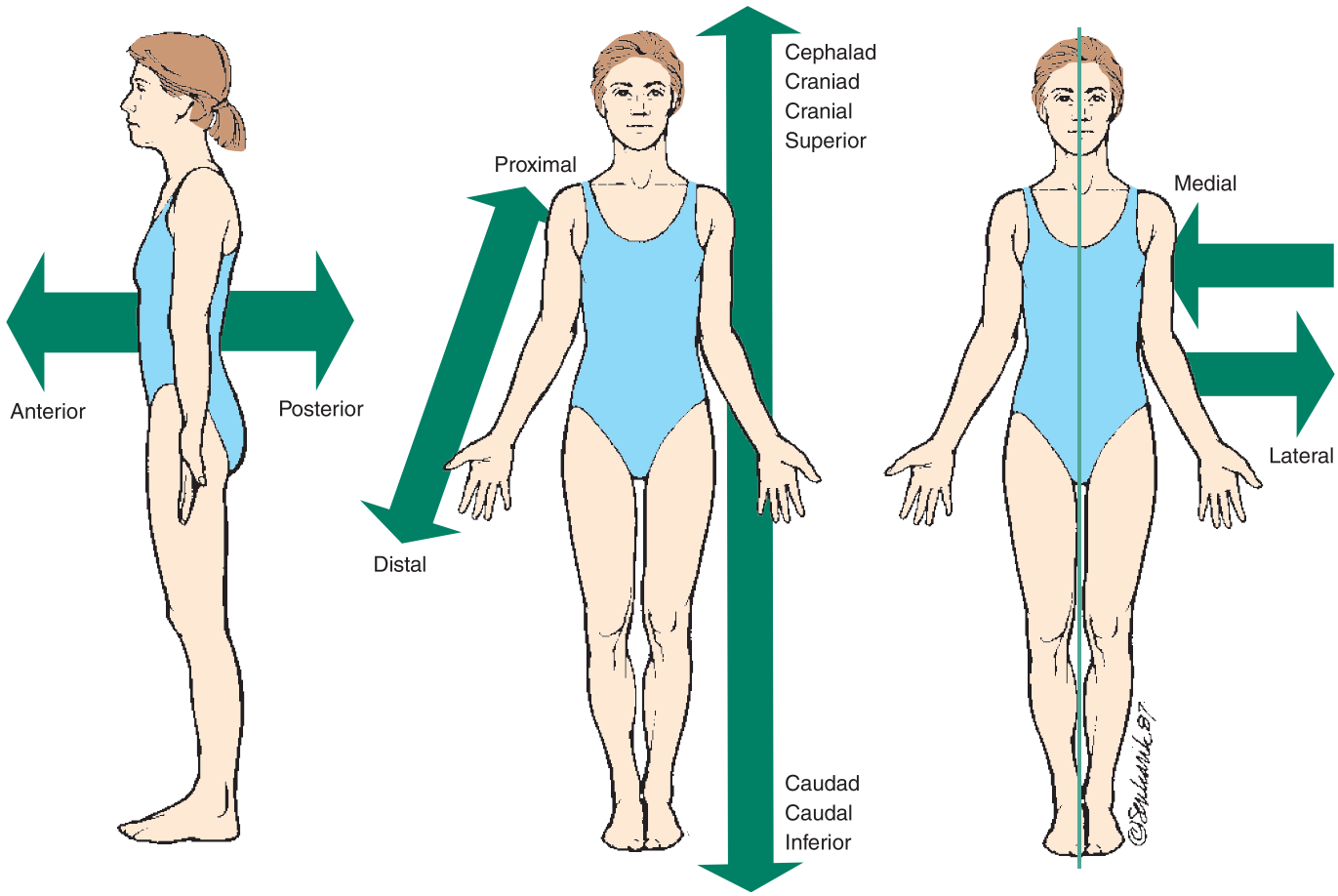

FIGURE 3.2. Body Directions. Directional terms are used to discuss body parts in relation to one another. Reprinted with permission from *Stedman's Medical Dictionary*, 27th ed. Baltimore: Lippincott Williams & Wilkins 2000.

- Medial: Toward the midline of the body.
- Lateral: Toward the side of the body, or away from the midline.
- Ipsilateral: On the same side of the body.
- Contralateral: On the opposite side of the body.
- Proximal: Nearest to the trunk or point of origin.
- Distal: Farther from the center of the body or point of origin.
- Superior (cranial): Above, or pertaining to or toward the skull.
- Inferior: Away from the head or toward the lower part of a body or structure; opposite of superior.
- Caudad: Situated farther from the head in relation to a specific reference point; opposite of craniad.
- Cephalad: Toward the head or upper part of a structure.
- Caudal: Pertaining to the tail.
- Craniad: Situated nearer to the head in relation to a specific reference point; opposite of caudad.
- Superficial (external): Pertaining to or nearer to the surface of the body.
- Deep (internal): Closer to the center of the body.
- Palmar: On or toward the palm of the hand.
- Plantar: On or toward the sole of the foot.
- Dorsum: On the upper or posterior surface of any body part.

Anatomic Planes

Medical professionals often refer to sections of the body in terms of **anatomic planes**, or flat surfaces. These planes are imaginary lines—vertical and horizontal—drawn through an upright body, as shown in Figure 3.3. Each anatomic plane divides the body into certain sections:

- Frontal plane: A vertical plane running from side to side that divides the body or organ into anterior and posterior sections.
- Sagittal plane: A vertical plane running from front to back that divides the body into right and left sides.
- Transverse plane: A horizontal plane that divides the body into upper and lower parts.

X-ray Positioning

When performing an x-ray or other radiologic procedure, the radiographer positions the patient based on

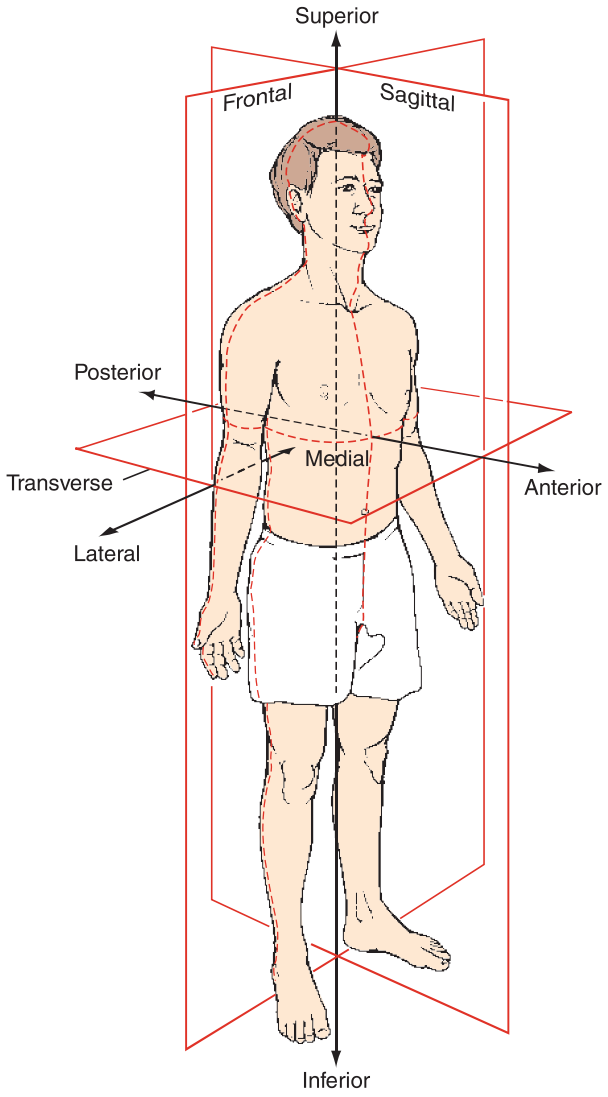

FIGURE 3.3. Anatomic Planes. Body planes are imaginary reference lines—vertical and horizontal—drawn through an upright body. Reprinted with permission from Oatis CA. *Kinesiology: The Mechanics and Pathomechanics of Human Movement*. Baltimore: Lippincott Williams & Wilkins 2003.

the body part to be imaged, suspected defect or disease, and condition of the patient. Since many body parts overlay other internal structures, the radiographer positions the body part as well as the x-ray equipment to obtain the clearest image possible. X-ray exams usually consist of two or more radiographs. Some common positions used in radiologic studies include:

- Anteroposterior (AP): The view going through the patient from anterior to posterior.
- Posteroanterior (PA): The view going through the patient from posterior to anterior.
- Lateral: The view from the side of the patient or structure being imaged.
- Right lateral decubitus: The view with patient lying on the right side.
- Left lateral decubitus: The view with patient lying on the left side.
- Oblique: A view that is slanted or at an angle.
- Lordotic: The view with the patient leaning back while standing.

Body Cavities

Many organs and organ systems in the body are housed in compartments called **body cavities**. These confined spaces within the body serve to separate, support, and protect the internal organs from the daily wear of everyday movement. Body cavities also permit organs such as the lungs, the bladder, and the stomach to expand and contract while remaining securely supported.

The human body cavities are separated into ventral and dorsal cavities, as illustrated in Figure 3.4. These cavities are further subdivided into specific body cavities that house and protect internal organs:

- The cranial cavity, which encases the brain.
- The spinal cavity, which surrounds the spinal cord.
- The thoracic cavity, which contains the heart, esophagus, and organs of the respiratory system—the lungs, trachea, and bronchi.

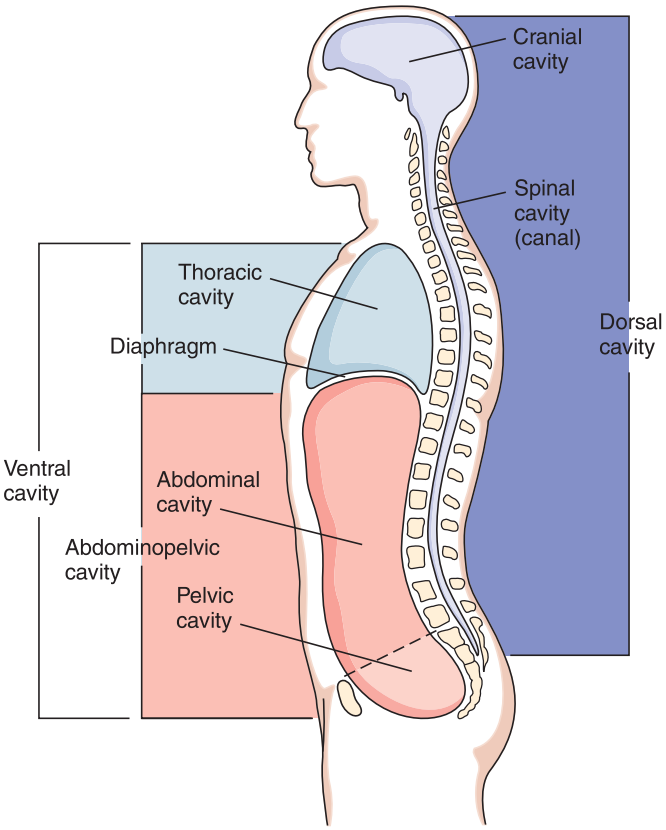

FIGURE 3.4. Body Cavities. Body cavities separate, support, and protect the organs from the daily wear of everyday movement. Reprinted with permission from Cohen BJ, Wood DL. *Memmler's The Human Body in Health and Disease*, 9th Ed. Philadelphia: Lippincott Williams & Wilkins, 2000.

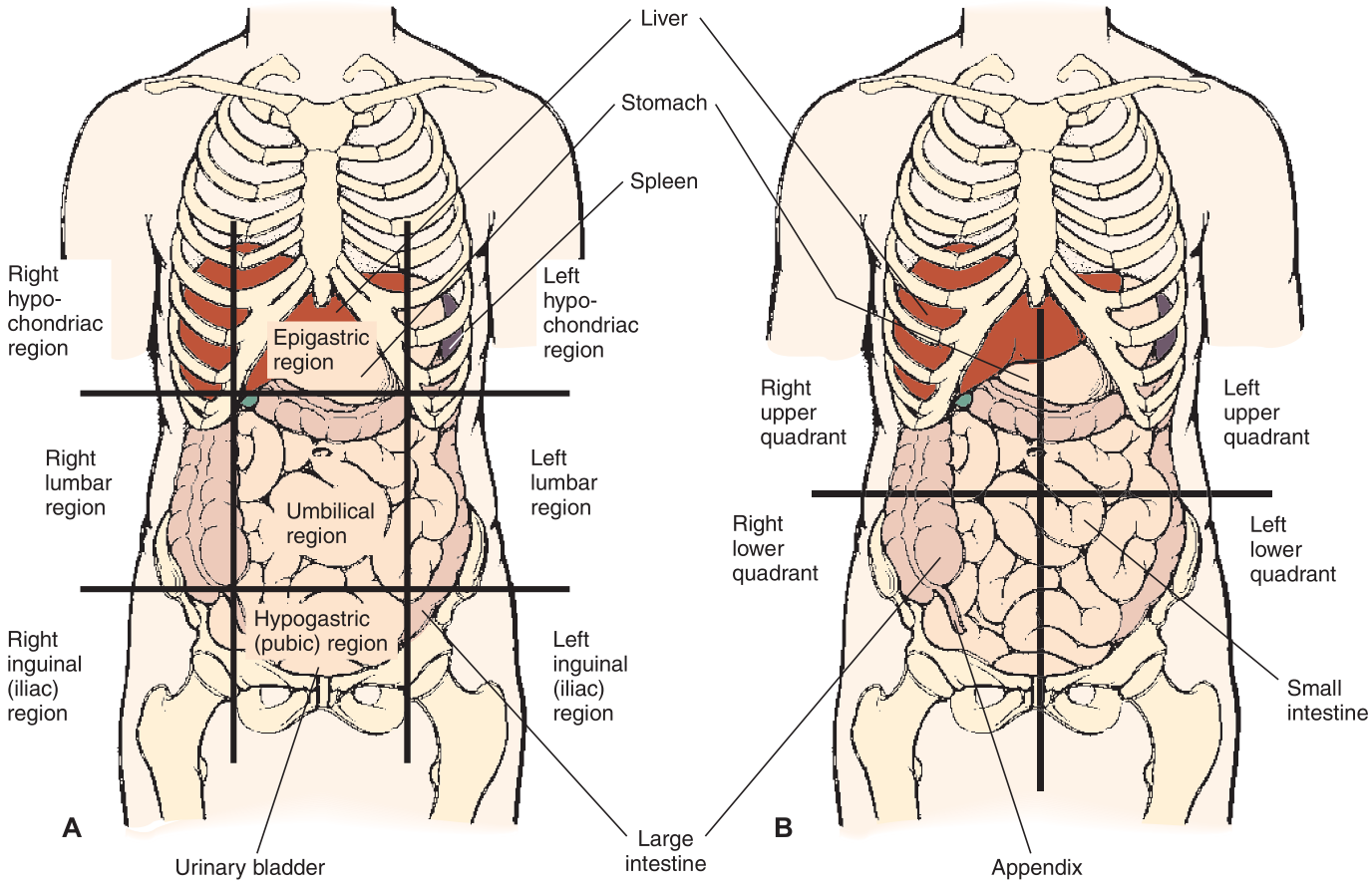

FIGURE 3.5. Abdominal Regions and Quadrants. Physicians refer to nine regions **(A)** and four quadrants **(B)** of the abdominal cavity to describe the location of abdominal organs, pains, or disorders. Reprinted with permission from *Stedman's Medical Dictionary*, 27th ed. Baltimore: Lippincott Williams & Wilkins, 2000.

- The abdominopelvic cavity, which contains the organs of the digestive, reproductive, and excretory systems.

The thoracic and abdominal cavities are separated by the **diaphragm**, a wall of muscle which aids in breathing.

Body Regions and Quadrants

Physicians refer to nine regions of the abdominal cavity to describe the location of abdominal organs, pains, or disorders, as shown in Figure 3.5(A). The nine regions are delineated by four planes: Two sagittal (vertical) and two transverse (horizontal) planes, and divided as follows:

- Midline sections (3): The epigastric (above the stomach); umbilical (at the umbilicus or navel), and hypogastric (below the stomach).
- Lateral sections (2): The right and left hypochondriac regions, positioned near the ribs.
- Right and left lumbar sections (2): Positioned near the small of the back, or lumbar region.
- Right and left iliac sections (2): Named for the upper bone of the hip (ilium) and also called the inguinal region, which refers to the groin.

In addition, physicians use imaginary quadrants to indicate locations of body structures for diagnostic and surgical procedures. These quadrants are a result of projecting two imaginary lines, one vertically along the body's midline and the other horizontally through the umbilicus, as illustrated in Figure 3.5(B). These lines separate the abdomen into four equal sections: the left upper quadrant, the right upper quadrant, the left lower quadrant, and the right lower quadrant.

TRANSCRIPTION TIP:

The term **hypochondriac** literally means "beneath cartilage," referring to the cartilages of the ribs. The term is applied to a person who exhibits abnormal anxiety about his or her health because the hypochondriac region, especially the spleen, was thought to be the seat of this disorder.

QUICK CHECK 3.4

Complete the following sentences.

1. The _____ divides the body into right and left sides.
2. The anatomic term that describes a structure toward the front of the body is _____ .
3. The _____ separates the thoracic and abdominal cavities.
4. The term _____ refers to a structure toward the sole of the foot.
5. The brain and spinal cord are located in the _____.

CLOCK BODY POSITIONS

Another method of describing a location in a diagnostic or surgical procedure is by use of an imaginary analog clock face envisioned over the object, with 12 o'clock being at the top of the object and 6 o'clock at the bottom. When medical providers describe a location using this method, they will refer to it as "the 12 o'clock position" or "the 7 o'clock position." In describing more than one location, physicians may dictate the locations, for example, as "the 3-, 5-, and 7-o'clock positions." Sometimes to be more specific, a physician may use a half-hour notation, which is transcribed as, for example, "the 3:30 position."

TRANSCRIPTION TIP:

When an anatomic position is described in terms of a clock face orientation as seen by the viewer, use the word *o'clock* unless the position is subdivided. For example, 3-o'clock position, or 3:30 position, but not 3:30-o'clock position.

CHAPTER SUMMARY

Learning medical terminology is the most difficult and extensive part of medical transcription. Basic familiarity with the fundamentals of body direction and position, as well as a thorough understanding of medical word building, will hone your ability to recognize unfamiliar terms when they are dictated and ascertain their meanings while you are transcribing.

As with learning any new language, you should read aloud when you can to familiarize yourself with the pronunciation of each medical term and practice using new terms as much as possible. When transcribing dictation that is difficult to understand, slang, or words that are unfamiliar to you, remember that you are creating not only a medical document that must be understood clearly, but also a legal document in which language cannot be ambiguous. Healthcare professionals must balance the time saved using slang or nonstandard language with the possibility that this choice of words might result in a transcription error. A clear, unambiguous statement is essential. Keep in mind that even with the auditory challenges you will face, accuracy and clarity must always be the main goals in creating medical reports.

·I·N·S·I·G·H·T·

The Unique Language of Medicine

Although medical language derived from Greek and Latin origins, today English serves as the base of language used by medical doctors when they communicate with each other.

The oldest written sources of Western medicine are the Hippocratic writings from the 5th and 4th centuries BC, which cover all aspects of medicine at that time and which contain numerous medical terms. This was the beginning of the Greek era of the language of medicine, which lasted even after the Roman conquest, since the Romans, who had no similar medical tradition, advanced the study and practice of medicine using Greek terminology. They named numerous anatomic structures and diseases in Latin as well as Greek, and these words remain a part of medical language today.

Today, however, it would appear that medical doctors around the world have chosen English as the single language for international communication. All the most influential medical journals are written in English, and English has become the language of choice at international medical conferences. Many terms are derived from English and translated to the language of the user. For example, the Russians use the term *shuntirovanie*, which is a term derived from the English word, *shunt*, and the Danish use the verbs *screene* and *skanne*, for naturalized English words *screen* and *scan*, respectively. Whereas in former times new medical terms were derived from classical Greek or Latin roots, now they are often, partly, or wholly composed of words borrowed from ordinary English. For example, terms such as *bypass* operation, *screening*, and *scanning* are all commonly used even by doctors from non-English-speaking countries. The term *bypass* is accepted in German, Dutch, Scandinavian, Italian, and Romanian. English acronyms such as AIDS, CT, and MRI are universally accepted terms and nouns in their own right.

Linguists find the language of medicine fascinating for the flow of concepts and words from one tongue to another. For medical transcriptionists, an appreciation of the history and original meaning of words offers a new dimension to the language of their profession.

TERMINOLOGY

Term	*Meaning*
anatomic planes	Imaginary lines—vertical and horizontal—drawn through an upright body.
anatomic position	An arbitrary position used as a reference when describing parts of the body in relation to each other.
body cavities	Confined spaces in the body that house major organs.
combining form	A word containing the root word plus the combining vowel.
combining vowel	A vowel that aids in the pronunciation of a word, used to combine a root word and suffix or two roots.
compound word	A word that contains more than one root word.
diaphragm	A wall of muscle that aids in breathing.
homonym	Two or more identical-sounding words that have different spellings and meanings.
hypochondriac	A term applied to a person with abnormal anxiety about his or her health.
Institute for Safe Medication Practices (ISMP)	A nonprofit organization that partners with healthcare practitioners toward improvements in drug distribution naming, packaging, labeling, and delivery system design.
jargon	Often called "shop talk," the technical terminology used in a special field or profession, such as medicine or law.
The Joint Commission	An independent, not-for-profit organization that sets the standards by which health-care quality is measured in America and around the world.
medical terminology	The words that make up the language of medicine.
midline	An imaginary vertical line that divides the body into equal right and left sides.
phonemes	The 44 sounds of the English alphabet.
prefix	A syllable or group of letters at the beginning of a word that modifies the root word and changes its meaning.
root word	The foundation, or basic part, of a word.
slang	A type of language deliberately used in place of standard terms by a particular group.
soundalike words	Words that sound alike but have different spellings and meanings.
suffix	A group of letters added to the end of a word to change its meaning.

Add Your Own Terms and Definitions Here:

REVIEW QUESTIONS

1. What is the difference between a homonym and a soundalike word?
2. Is it acceptable to use slang and jargon in medical reports? Why or why not?
3. What is the difference between a prefix and a suffix?
4. What is the term used to describe words that sound identical but have different meanings?
5. From what languages are medical terms commonly derived?
6. Why is the anatomic position referred to when using terms to describe the body?
7. What is the purpose of the Joint Commission's "dangerous abbreviations" list?
8. What are body cavities?
9. From what is slang derived?
10. What is the purpose of a combining vowel?

CHAPTER ACTIVITIES

Multiple Choice

Circle the letter corresponding to the best answer for the following questions.

1. The term "medial" refers to
   A. a direction toward the midline of the body.
   B. an anatomic position.
   C. a direction toward the foot of the body.
   D. a kind of soundalike word.

2. In the anatomic position, the hands are
   A. faced backward.
   B. in a fist.
   C. turned in.
   D. faced forward.

3. A transverse plane divides the body into _____ segments.
   A. 5
   B. 2
   C. 4
   D. 6

4. Words that make up the language of medicine are collectively referred to as
   A. medical terminology.
   B. medical ethics.
   C. slang and jargon.
   D. homonyms.

5. A compound word contains
   A. more than one root word.
   B. at least two prefixes.
   C. no root word.
   D. three word parts.

6. What is the plural form of bacterium?
   A. Bacteriae
   B. Bacteriums
   C. Bacteries
   D. Bacteria

7. _____ sound nearly alike but have different spellings and meanings.
   A. Soundalikes
   B. Homonyms
   C. Synonyms
   D. Slang terms

8. The imaginary vertical line that divides the body into equal right and left sides is known as the
   A. anatomic line.
   B. lateral division.
   C. midline.
   D. dorsal plane.

9. Words that sound identical but have different spellings and meanings are called
   A. soundalikes.
   B. jargon.
   C. synonyms.
   D. homonyms.

10. The _____ is found in the cranial cavity.
    A. diaphragm
    B. lungs
    C. spinal cord
    D. brain

Matching

Using a medical dictionary or other medical resource, look up the meaning of each soundalike term on the left and then match it to its corresponding definition on the right.

Term	*Definition*
1. _____ illicit	A. The area referring to the fibula or outer side of the leg.
2. _____ elicit	B. Illegal.
3. _____ ACE	C. Difficulty swallowing.
4. _____ Ace	D. A systematic course of diet, therapy, or exercise.
5. _____ ace	E. The term referring to the area between the scrotum and anus in a male or vulva and anus in a female.
6. _____ perineal	F. To call forth, as in a response.
7. _____ peroneal	G. The third portion of the small intestine.
8. _____ ileum	H. A system of organs.
9. _____ ilium	I. An impairment in the production of speech.
10. _____ dysphagia	J. A brand name for bandages and wraps.
11. _____ dysphasia	K. Broad, flaring portion of the hip bone.
12. _____ regimen	L. A playing card or supreme achiever.
13. _____ regime	M. A government or social system.
14. _____ track	N. Acronym for angiotensin-converting enzyme.
15. _____ tract	O. A pathway.

Soundalike Multiple Choice

Choose the correct term to complete each sentence.

1. She presented to the mental health clinic with a flat _____.
   A. affect
   B. effect

2. The patient was started on a new medical _____.
   A. regime
   B. regimen

3. The child's _____membranes were pink and moist.
   A. mucus
   B. mucous

4. We turned our attention to the _____ of the inflamed appendix.
   A. site
   B. sight

5. The CT scan showed a _____ mass in the left lung.
   A. discreet
   B. discrete

6. The patient had no history of smoking, drinking, or _____ drug use.
   A. elicit
   B. illicit

7. After the surgery, she was given a _____ of IV gentamicin for her infection.
   A. bullous
   B. bolus

8. We could not _____ a response from the patient to any questions we asked.
   A. elicit
   B. illicit

9. The doctor ordered _____ x-ray films of the lumbar spine.
   A. plain
   B. plane

10. The patient works as a home health _____.
    A. aid
    B. aide

Word Definitions

Using a medical dictionary or other medical resource, look up and analyze the following terms. Indicate the prefix, the root word (or combining form), and suffix, as well as the definition of each term.

1. tachycardia
   prefix: _____
   root (combining form): _____
   suffix: _____
   definition: _____

2. hematopoiesis
   prefix: _____
   root (combining form): _____
   suffix: _____
   definition: _____

3. hemicolectomy
   prefix: _____
   root (combining form): _____
   suffix: _____
   definition: _____

4. gynecomastia
   prefix: _____
   root (combining form): _____
   suffix: _____
   definition: _____

5. polydipsia
   prefix: _____
   root (combining form): _____
   suffix: _____
   definition: _____

6. hypothermia
   prefix: _____
   root (combining form): _____
   suffix: _____
   definition: _____

7. esophagogastrostomy
   prefix: _____
   root (combining form): _____
   suffix: _____
   definition: _____

8. pneumonia
   prefix: _____
   root (combining form): _____
   suffix: _____
   definition: _____

9. euthermic
   prefix: _____
   root (combining form): _____
   suffix: _____
   definition: _____

10. subpleural
    prefix: _____
    root (combining form): _____
    suffix: _____
    definition: _____

Anatomic Terms Quiz

Fill in the blank with the correct term.

1. The knee is _____ to the ankle.
2. The heart is _____ to the lungs.
3. The nose is _____ to the chin.
4. The sagittal plane divides the body into _____ and _____ segments.
5. The stomach is in the _____ cavity.
6. The skin is _____ to the muscles.
7. The _____ section divides the body or an organ into anterior and posterior parts.
8. The _____ plane runs through the midline.
9. The arms are _____ to the trunk.
10. The _____ plane runs front to back.

Creating Medical Words

Consider the meaning of the combining form from which the medical term is made and write the meaning of the medical term. (You have not yet learned many of these terms but can build their meaning from the word parts.)

Combining form	*Meaning*	*Medical Term*	*Meaning of Term*
adenoid/o	adenoids	adenoidectomy	1. _____
laryng/o	larynx	laryngoplasty	2. _____
hepat/o	liver	hepatomegaly	3. _____
hyster/o	uterus	hysterectomy	4. _____
lith/o	stone, calculus	lithotripsy	5. _____
leuk/o	white	leukopenia	6. _____
nephr/o	kidney	nephrology	7. _____
cyan/o	blue	cyanosis	8. _____
pneum/o	lung; air	pneumonitis	9. _____
path/o	disease	pathologist	10. _____
rhin/o	nose	rhinorrhea	11. _____
arthr/o	joint	arthralgia	12. _____
gastr/o	stomach	gastritis	13. _____
cardi/o	heart	cardiology	14. _____
dermat/o	skin	dermatology	15. _____

Fill in the Blanks

Fill in the correct term for the definition listed. You have not yet learned many of these terms, but you can build them from the word parts that make up each word.

cardiac	hematemesis	bronchial
hemiplegia	thoracic	endometrial
myopathy	hemorrhage	uterine
appendicitis	cholangiogram	dermatitis

Definition	*Term*
1. pertaining to the thorax	_____
2. relating to the bronchus	_____
3. inflammation of the skin	_____
4. vomiting of blood	_____
5. paralysis of one side of the body	_____
6. pertaining to the endometrium	_____
7. inflammation of the appendix	_____
8. pertaining to the heart	_____
9. flowing of blood through vessel walls	_____
10. disease or abnormality of muscular tissue	_____
11. written record of the bile ducts	_____
12. pertaining to the uterus	_____

TRANSCRIPTION PRACTICE

Open your word processing software. Insert the student CD-ROM disk and locate the dictation for this chapter. Listen to the dictation number and transcribe the 10 sentences dictated on the CD. Be sure to listen carefully to each sentence before transcribing it. Use a medical dictionary or other medical references to assist you in finding the correct spelling of the words in each sentence. When finished, print one copy for your instructor and save a copy to your student disk.